Internal distribution code:

(A) [-] Publication in OJ
(B) [-] To Chairmen and Members
(C) [-] To Chairmen
(D) [X] No distribution

Datasheet for the decision of 18 June 2014

Case Number: T 0617/10 - 3.3.03

Application Number: 06754762.0

Publication Number: 1877478

IPC: C08K3/00, C08K5/00, C08K5/09, C08K9/12, C08K13/02, B65D81/28

Language of the proceedings: EN

Title of invention:
ACTIVE PACKAGE WITH PRESERVATIVE ACTION

Applicant:
Arcadia SRL

Headword:

Relevant legal provisions:
EPC Art. 56

Keyword:
Inventive step - (yes)

Decisions cited:

Catchword:

Europäisches Patentamt
European Patent Office
Office européen des brevets

Beschwerdekammern
Boards of Appeal
Chambres de recours

European Patent Office
D-80298 MUNICH
GERMANY
Tel. +49 (0) 89 2399-0
Fax +49 (0) 89 2399-4465

Case Number: T 0617/10 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 18 June 2014

Appellant: (Applicant)	Arcadia SRL Zona Industriale Pannellia, 60 33039 Sedegliano (IT)
Representative:	Petraz, Gilberto Luigi GLP S.r.l. Viale Europa Unita, 171 33100 Udine (IT)
Decision under appeal:	**Decision of the Examining Division of the European Patent Office posted on 24 September 2009 refusing European patent application No. 06754762.0 pursuant to Article 97(2) EPC.**

Composition of the Board:

Chairwoman	B. ter Laan
Members:	F. Rousseau
	C. Brandt

Summary of Facts and Submissions

I. The present appeal lies from the decision of the Examining Division posted on 24 September 2009 refusing European patent application No. 06 754 762.0.

II. The contested decision was based on a single set of ten claims submitted with letter of 12 February 2009, claim 1 of which read as follows:

"1. Active package with preservative action consisting of a film made starting from a mixture comprising at least a certain quantity of a polyethylene or polypropylene, charged with at least a support additive component suitable both to increase the consistency and resistance of the polyethylene or polypropylene, and also to provide it with a desired aesthetic and tactile appearance, for example similar to paper, the mixture which forms the film further comprising at least a food type additive, with preservative capacities, in particular, but not only, anti-oxidizing capacities due to contact and reaction with a surface of a packaged product, said food additive component being distributed as uniformly as possible in the mixture and on the surface of the film used for the package, thus ensuring a contact, and hence a reaction, which are distributed over a large surface of the packaged product, so that no areas are created with different level of deterioration from others, said food additive component being chosen between one or more of the following elements: ascorbic acid, acetic acid, sorbic acid, propionic acid, lactic acid, citric acid or the salts thereof, or a mixture of two or more thereof, and said food

additive being anchored and supported by the particles of support additive component so as to develop their preservative function better and in a more extensive manner, since their tendency to migrate and disperse in the atmosphere is reduced."

Dependent claims 2, 3 and 5 defined the support additive as consisting of at least partly of calcium carbonate, to consist at least partly of zeolites (11) and to consist of silicates, respectively.

III. According to the impugned decision, the feature introduced in claim 1 that the food additive could be anchored and supported by the particles of the support additive was disclosed in the application as filed only in relation to zeolites but not in general for support additives of any kind, in particular neither for calcium carbonate nor for silicate, as defined in claims 2 and 5 of the amended set of claims. Hence, claims 1, 2 and 5 did not comply with the requirements of Article 123(2) EPC. Novelty over D1(JP-A-2003105216) representing the closest prior art, was acknowledged, since it did not describe a freshness-keeping agent selected from the group consisting of ascorbic acid, acetic acid, sorbic acid, propionic acid, lactic acid, citric acid or their salts. In the absence of any comparison with the closest prior art, the problem to be solved could only de defined as to provide further packaging materials with preservative action. However, D2 (DE-A-19532489), D3 (US-A-5393809) and D4 (WO-A-01/46028) rendered obvious the use of ascorbic acid, acetic acid, sorbic acid, propionic acid, lactic acid, citric acid or their salts in films intended for packaging materials for foodstuff. Furthermore, D1 taught that the cyclodextrine of its Comparative

Example 2 could be replaced by a zeolite. Hence, the subject-matter of *inter alia* claims 1 and 3 did not involve an inventive step. In addition, claim 1 was found to lack clarity due to the use of a number of vague expressions.

IV. On 27 November 2009 the Applicant filed an appeal against that decision and paid the prescribed fee on the same day. With the statement setting out the grounds for the appeal, filed on 4 April 2010, the Appellant submitted three sets of claims as well as the following documents:

D5: Copy of poster by M. Gumiero and A. Sensidoni indicated to have been presented at the "14th Workshop on the developments in the Italian PhD Research on Food Science Technology and Biotechnology, September 16-18, 2009"

D6: Copy of a poster by M. Gumiero *et al* indicated to have been presented at the CISETA congress, Milano June, 2009 and

D7: Presentation by the Applicant concerning products "Ovtene®" and "Ovtene® active".

V. A communication by the Board was issued on 23 April 2014 in which the following documents were introduced to the proceedings:

D8: US-A-4879078

D9: S. Quintavalla *et al* "Antimicrobial food packaging in meat industry", Meat Science 62 (2002) 373-380,

VI. With letter of 19 Mai 2014, the Appellant submitted six additional sets of claims.

VII. At the oral proceedings before the Board held on 18 June 2014, after discussion of the claims then on file, the Appellant finally defended the application in suit on the basis of one set of claims headed "New Main Request" submitted at the oral proceedings before the Board, all previously filed claims being withdrawn. Independent claim 1 of the "New Main Request" reads as follows (the additions in the claims compared to claim 1 as originally filed are shown in **bold** and deletions are ~~struck out~~):

"1. Active package with preservative action consisting of a film, **strip or tube** made starting from a mixture comprising at least a certain quantity of a **polyethylene or polypropylene** ~~suitable polymer~~, charged with at least a~~n~~ **support** additive component suitable both to increase the consistency and resistance of the **polyethylene or polypropylene** ~~polymer~~, and also to provide it with a desired aesthetic and tactile appearance, ~~for example similar to paper, characterized in that into~~ **said support additive being selected from a group consisting of $CaCO_3$, zeolites (11) and silicates**, the mixture which forms the film, **strip or tube**, **further comprising** at least a food type additive **(12)** ~~is introduced,~~ with preservative capacities, ~~in particular, but not only, anti-oxidizing capacities~~, **said food additive (12) being chosen between one or more of the following elements: ascorbic acid, acetic acid, sorbic acid, propionic acid, lactic acid, citric acid or the salts thereof, or a mixture of two or more thereof.**"

The new main request comprises in addition dependent claims 2 to 7 directed to preferred embodiments of

claim 1. Claim 2 specifies the nature of the silicate. Claims 3, 4 and 5 define the additional use of titanium dioxide and amounts thereof, while claim 6 and claim 7 define the thickness of the active package and the use of an expander agent, respectively.

VIII. The arguments of the Appellant as far as they are relevant to the present decision, can be summarised as follows:

a) The amended claims were based on the application as originally filed.

b) As regards inventive step, the closest prior art could be represented by D9 which disclosed an LDPE film packaging material comprising potassium sorbate incorporated by extrusion. The problem solved over document D9 was to provide a packaging material having a longer preservative action, i.e. allowing longer shelf-life for the packaged food product. This problem had been solved by the use of a support additive selected from calcium carbonate, silicates and zeolites. Since no prior art suggested that the support additives defined in present claim 1 would improve the long term release of the food additive, the claimed subject-matter involved an inventive step.

IX. The Appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the claims of the new main request (claims 1 to 7) filed at the oral proceedings on 18 June 2014.

X. At the end of the oral proceedings, the decision of the Board was announced.

Reasons for the Decision

1. The appeal is admissible.

Amendments

2. Claim 1 of the "New main request" is based on claim 1 as originally filed, wherein the following amendments have been carried out:

- The active package is in the form of a film, strip or tube as disclosed in claim 12, as well as on page 4, lines 12-15, page 4, line 27 and page 7, lines 5-11 of the application as originally filed.

- The expression "suitable polymer" has been replaced by the term "polyethylene or polypropylene" which polymers constitute the sole general classes of polymer exemplified in the application as originally filed (page 4, lines 16-17).

- The additive component of original claim 1 suitable both to increase the consistency and resistance of the polymer has been specified to be one of the three types of compounds disclosed in the application as filed to perform that function, namely calcium carbonate, zeolites and silicates (claims 4, 5 and 7 and passage from page 5, line 28 to page 6, line 12, as well as page 7, lines 25-27). Moreover, the use of the terms "support additive component" to define the component selected from a group consisting of calcium carbonate, zeolites and silicates is based on the wording of original claims 4, 5 and 7 which refer solely to claim 1 and hence specify "the additive component" of

claim 1 as functioning as a support for the polymeric material.

- The general definition of food type additive in original claim 1 has been replaced by a list of compounds defined to perform that function, namely ascorbic acid, acetic acid, sorbic acid, propionic acid, lactic acid, citric acid or the salts thereof, or a mixture of two or more thereof, in accordance with the disclosure in claim 3 and the passage from page 4, line 34 to page 5, line 7 of the application as filed.

- Finally, the deletion of the terms “for example similar to paper” is, in view of their mere illustrative character, in keeping with the requirements of Article 123(2) EPC.

2.1 Hence, the subject-matter of present claim 1 has been amended in comparison to original claim 1 in essence by replacing the features "suitable polymer", "additive component" and "food type additive" by the respective general classes of compounds specified for them in the application as originally filed, as well as by clarifying the form of the package in accordance with the original disclosure. Consequently, the subject-matter of claim 1 meets the requirements of Article 123(2) EPC.

2.2 The same holds true for dependent claims 2 and 3, which contain the features of original dependent claims 7 and 8, respectively, and dependent claim 6 which defines the thickness of the active packaging defined in original dependent claim 10. As to amended claims 4 and 5, they find a basis on page 6, lines 27-30 of the application as originally filed. Finally, the subject-

matter of present dependent claim 7 is based on original dependent claim 11.

2.3 The Board is therefore satisfied that the claims according to the "New main request" meet the requirements of Article 123(2) EPC.

Clarity

3. The objection that claim 1 underlying the contested decision lacked clarity in view of a number of expressions has been overcome by suppressing the controversial expressions.

Novelty

4. The only document cited in the procedure that discloses a packaging product containing polyethylene or polypropylene and a food additive as defined in present claim 1, is D9. D9 is a general article concerning antimicrobial packaging systems in the meat industry. According to its conventional definition provided in D9 (page 373, left-hand column, first paragraph) an active packaging is "a type of packaging that changes the condition of the packaging to extend shelf-life or improve safety or sensory properties while maintaining the quality of the food". Such active packaging can in particular be an LDPE (low density polyethylene) film comprising 1% potassium sorbate incorporated into the resin by extrusion, as reported in D9 which also refers to an article by J. H. Han in Food Technology, 54(3), 56-65 (2000) (see D9, page 374, left-hand column, second full paragraph and right-hand column, last full paragraph, as well as corresponding Figures 1 and 2 on pages 374 and 375). D9, however, does not disclose that such an antimicrobial film contains in addition an

additive selected from a group consisting of $CaCO_3$, zeolites and silicates. Novelty of the claimed subject-matter is therefore acknowledged.

Inventive Step

Closest state of the art

5. The application concerns an active package with a preservative action upon contact for the industrial, artisan and domestic packaging of food products (page 1, first paragraph). The packaging according to present claim 1 is characterized by the nature of the polymer, the food additive and the support additive (see point VII above). A similar packaging with preservative action upon contact with the food is described in D9 as indicated in above point 4. The Board, in agreement with the Appellant, therefore considers that the closest prior art and therefore the starting point for assessing inventive step is represented by the LDPE film comprising 1% potassium sorbate reported in D9. D1 used by the Examining Division as a starting point for assessing inventive step is more remote as it concerns biodegradable polymers and does not disclose the combined use of polymer and food additives now defined in present claim 1.

Problem to be solved and solution

6. In view of D9, the problem underlying the present application, as formulated by the Appellant at the oral proceedings and in line with the general purpose of such active packagings, is to provide a packaging material that has a longer preservative action, i.e. allows a longer shelf-life for the packaged food product.

As the solution to the problem so defined the present application proposes the package according to claim 1, characterised in that it contains in addition to the polyethylene or polypropylene and the food additive chosen from one or more of ascorbic acid, acetic acid, sorbic acid, propionic acid, lactic acid, citric acid or the salts thereof, a support additive selected from the group consisting of $CaCO_3$, zeolites and silicates.

Success of the solution

7. According to the Appellant's explanation provided during the oral proceedings before the Board, the mixture of the ingredients constituting the active package now being claimed, contains the food additive both adsorbed on the support additive as well as distributed in a non-adsorbed manner within the polyethylene or polypropylene matrix. In view of the chemical nature of the polymer, the food additive and the support additive defined in present claim 1, such a distribution of the food additive is considered credible by the Board. Since biochemical processes will take place in the food upon storage, it is likewise credible that consumption of the food additive at the surface of the packaging in contact with the food will occur, causing a concentration gradient and thereby triggering the diffusion of the food additive towards the inner surface of the packaging. Consequently, and in the absence of any proof to the contrary, it can be accepted that the support additive on which food additive molecules are adsorbed acts as a reservoir from which food additive molecules are progressively released, with the result that the food additive is available over a longer period compared to the use of the food additive alone, without support. Consequently,

the Board is satisfied that the problem of providing a packaging with longer preservative action has been successfully solved by the claimed solution.

Obviousness

8. It remains to be decided whether the proposed solution to the problem as defined above is obvious in view of the state of the art, in particular whether the skilled person would have been guided by the available prior art to use the food additive and the support additive in combination, according to claim 1.

8.1 The desirability of releasing antimicrobial substances from packaging material during an extended period of time is indicated in D9 (page 373, right-hand column, last paragraph). On page 375, right-hand column, the importance of controlling the release rate of the active substances is mentioned. However D9 proposes to solve that problem by providing a multilayer design wherein the migration and release of the antimicrobial agent added in one thin layer is controlled by the thickness of the film layer or coating (D9, page 375, right-hand column). That is based on a different principle than that underlying the compositions proposed by present claim 1. D9 does not suggest that a prolonged release could be achieved by adding a support additive as defined in present claim 1, let alone in the context of the specific food additives now defined in this claim. The passage of D9 on page 376 referring to silver-substituted zeolite laminated as a thin layer in the surface of the food contact polymer does not concern the principle used in the present application, namely that the food additive is at the same time adsorbed on the support additive and distributed as such within the polymer component. Moreover, D9 does

not indicate that the zeolite which has some of its surface atoms replaced by silver (page 376, left-hand column) brings about advantages in terms of release of the silver ions, let alone that the zeolite itself would provide similar advantages when used in combination with the specific food additives defined in present claim 1. Consequently, a skilled person cannot derive any teaching from this document that would lead to the solution proposed in the application in suit.

8.2 D1 describes a biodegradable resin composition comprising a biodegradable resin, a freshness-keeping agent selected from antibacterial agents of natural origin and optionally a freshness-keeping supporting agent, which is either a plant porous substance and/or an inorganic porous mineral such as silica gel or zeolites (see abstract and paragraph [0009]). Although adsorption of the freshness-keeping agent on the supporting agent is implicit in D1, that document does not suggest that the use of zeolites or silica gel would provide any advantage in terms of release properties when used with other food additives such as those defined in present claim 1, let alone in the context of polyethylene or polypropylene.

8.3 D2 relates to an antimicrobial packaging material comprising a substrate material coated with an antimicrobial coating, said coating comprising a layered matrix comprising a non-ionic organic polymer and a metal oxide, and an active antimicrobial substance such as sorbic acid (claims 1 and 5). D2 does not concern an active package consisting of a film, strip or tube, but rather a coated material, wherein it is the coating material but not the self-supporting material that exhibits antimicrobial properties. Furthermore, D2 merely describes that the non-ionic

organic polymer is added to the metal oxide in order to improve the release of the active antimicrobial substance (page 3, lines 19-21). It does not suggest to incorporate a metal oxide in the structure of a polyethylene or polypropylene packaging containing an antimicrobial substance to extend the preservation action of that substance. Therefore, the skilled person would not find any teaching in D2 to change the packaging material of D9 so as to arrive at the material now being claimed.

8.4 D3 discloses the use of antiseptic and/or antioxidant agents impregnated onto an organic filler. It teaches neither the use of calcium carbonate, zeolites or silicates, nor that of the present polymeric matrix.

8.5 D4 relates to a package comprising a barrier partition that may, according to page 6, lines 9-19, comprise as optional components various fillers, such as clay, talc, mica and nanocomposites and also oxygen scavengers such as ascorbic acid. The fillers are merely described to possibly providing a tortuous path for oxygen, nitrogen or carbon dioxide. A possible interaction of those fillers with the food additives defined in present claim 1, such as ascorbic acid, is not described.

8.6 The presence of inert fillers (calcium carbonate, silica) in the polyolefin composition of D8 is required in order to obtain adequate CO_2 and O_2 permeability of the film prepared. Their possible interaction with additives, let alone food additives, is not addressed in that document.

8.7 Therefore, a skilled person cannot derive any teaching from D1 to D4 and D8 that could lead him to the

solution as proposed in the application in suit. Thus, document D9 alone or in combination with the other documents on file does not render the claimed invention obvious.

9. For these reasons, the Board concludes that the subject-matter of claim 1 and hence also that of dependent claims 2 to 7, which include all the features of claim 1, involves an inventive step within the meaning of Article 56 EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the fist instance with the order to grant a patent on the basis of claims 1 to 7 of the new Main Request submitted at the oral proceedings on 18 June 2014 and a description to be adapted thereto if necessary.

The Registrar: The Chairwoman:

E. Goergmaier B. ter Laan

Decision electronically authenticated