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Datasheet for the decision of 18 February 2014

Case Number: T 0764/12 - 3.3.09

Application Number: 02718003.3

Publication Number: 1370153

IPC: A23G4/06

Language of the proceedings: EN

Title of invention:
COATED DEGRADABLE CHEWING GUM WITH IMPROVED SHELF LIFE AND PROCESS FOR PREPARING SAME

Patent Proprietor:
Gumlink A/S

Opponent:
WM. Wrigley Jr. Company

Headword:

Relevant legal provisions:
EPC Art. 54, 56

Keyword:
Novelty - (yes)
Inventive step - problem invention (yes)

Decisions cited:
T 0002/83

Catchword:

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Case Number: T 0764/12 - 3.3.09

D E C I S I O N
of Technical Board of Appeal 3.3.09
of 18 February 2014

Appellant: (Opponent)	WM. Wrigley Jr. Company 1132 West Blackhawk Street Chicago, IL 60622 (US)
Representative:	Murphy, Colm Damien Ipulse 26 Mallinson Road London SW11 1BP (GB)
Respondent: (Patent Proprietor)	Gumlink A/S Dandyvej 19 7100 Vejle (DK)
Representative:	HOFFMANN EITLE Patent- und Rechtsanwälte Arabellastrasse 4 81925 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 19 December 2011 rejecting the opposition filed against European patent No. 1370153 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman: W. Sieber
Members: J. Jardón Álvarez
K. Garnett

Summary of Facts and Submissions

I. This decision concerns the appeal filed by the opponent against the decision of the opposition division rejecting the opposition filed against European patent No. 1 370 153 granted to Gumlink A/S.

II. The patent was granted with 60 claims, independent claims 1, 33, 44 and 52 reading as follows:

"1. A coated chewing gum element comprising 25 to 99.9% by weight of a chewing gum centre comprising at least one environmentally degradable elastomeric or resinous polymer and 0.1 to 75% by weight of an outer coating, wherein the at least one degradable elastomeric or resinous polymer contains bonds that are chemically unstable."

"33. A hard coating process for preparing a chewing gum element as defined in any of claims 1-18, the process comprising the steps of

(i) preparing a chewing gum mass comprising at least one environmentally degradable elastomeric or resinous polymer,

(ii) forming said chewing gum mass in to a desired gum centre form,

(iii) subjecting the thus formed chewing gum centres to at least one coating cycle comprising applying onto the gum centres an aqueous solution of a coating agent, and

(iv) repeating said cycle until the coating layer constitutes 0.1 to 75% by weight of the chewing gum element."

"44. A process for coating a chewing gum element according to any of claims 1-18, comprising the steps of:
(i) preparing a chewing gum mass comprising at least one environmentally degradable elastomeric or resinous polymer,
(ii) forming said chewing gum mass in to a desired chewing gum centre form,
(iii) applying onto at least a part of the thus formed chewing gum centres an edible film comprising at least one edible film-forming agent."

"52. A soft coating process for obtaining a coated chewing gum element as defined in claim 30, comprising the steps of:
(i) preparing a chewing gum mass comprising at least one environmentally degradable elastomeric or resinous polymer,
(ii) forming said chewing gum mass into a desired chewing gum centre form,
(iii) subjecting the thus obtained chewing gum centres to a soft coating process comprising alternately applying to the centres a non-crystallisable carbohydrate solution and a sugar powder until the soft coating layer constitutes 0.1 to 75% by weight of the chewing gum element."

Claims 2 to 32, 34 to 43, 45 to 51 and 53 to 60 were dependent claims.

III. The opponent, WM. Wrigley Jr. Company, had requested revocation of the patent in its entirety on the grounds that the claimed subject-matter was neither novel nor inventive (Article 100(a) EPC).

The documents cited during the opposition proceedings included:

D1: WO 00/35296 A1;

D2: JP 1997/9957 A (English translation);

D5: US 5 672 367 A;

D6: US 6 153 231 A;

D7: WO 00/19837 A1; and

D8a: J. Crowley *et al.*, "Environmentally-favorable erosion control with a polyvinyl acetate-based formulation" (11 pages, not-dated).

IV. The opposition division's position can be summarised as follows:

The claimed subject-matter was novel over the disclosure of D1 because the polyvinyl acetate used in D1 was a conventional non-degradable polymer not falling within the scope of claim 1.

The claimed subject-matter involved an inventive step because, starting from any of D5 to D7 as closest prior art document, the problem of premature degradation solved by claim 1 had not been recognized by the cited prior art documents.

V. On 17 February 2012 the opponent (in the following: the appellant) lodged an appeal and on the same day paid the prescribed fee. The statement setting out the grounds of appeal was filed on 12 April 2012 together with the following further documents:

D13: WO 01/47368 A1;

D14: US 4 792 453 A;

D15: US 4 828 845 A;

D16: EP 0 201 412 A1;

D17: EP 0 415 656 A2;

D18: WO 00/59543 A1;

D19: EP 0 273 856 A1;

D20: EP 0 229 594 A2;

D21: CA 501 810;

D22: EP 0 454 287 A2;

D23: US 4 725 441 A;

D24: WO 93/20708 A1;

D25: *Curriculum Vitae* of Douglas P. Fritz;

D26: Declaration of Douglas Fritz dated 05 April 2012 (5 pages); and

D27: OECD Guideline 302B for testing of chemicals, adopted by the Council on 17 July 1992 (8 pages).

VI. With its reply dated 28 August 2012 the patent proprietor (in the following: the respondent) disputed the arguments submitted by the appellant and requested

that the appeal be dismissed (main request); or, alternatively, that the patent be maintained in amended form with the claims according to newly filed first to third auxiliary requests.

VII. On 26 August 2013 the board dispatched a summons to oral proceedings. In a communication dated 25 September 2013 the board indicated the points to be discussed during the oral proceedings. The board also noted that document D13 had been published between the filing date and the claimed earliest priority of the patent in suit.

VIII. On 17 January 2014 the respondent filed twelve sets of amended claims for a main request and eleven auxiliary requests to take account of the disclosure of D13.

IX. On 24 January 2014 the appellant filed further arguments and the following documents:

D28: Wikipedia article "Biodegradable polymer" (3 pages);

D29: A.-C. Albertsson *et al.*, Acta Polymerica, 46(2), 1995, page 114;

D30: M. Šprajcar *et al.*, "Biopolymers and Bioplastics" Plastice, Innovative value chain development for sustainable plastics in Central Europe, May 2012 (32 pages);

D31: Excerpts from "Biodegradable Polymers and Plastics", Edited by M. Vert *et al.*, Royal Society of Chemistry, 1992 (10 pages);

D32: Handbook of Biodegradable Polymers, Edited by A. J. Domb *et al.*, 1997, pages 452-455;

D33: J. A: Merl *et al.*, Silesia Confiserie Manual No. 4, 1996 (5 pages);

D34: US 146 541 A;

D35: JP 1992-304848; and

D36: US 5 077 053 A.

X. On 18 February 2014 oral proceedings were held before the board. During the oral proceedings the issues of novelty and inventive step were discussed first without considering the issue of priority. As it turned out that the claims of the main request were allowable even assuming that priority was not validly claimed, there was no need to discuss the priority issue.

The set of claims of the main request includes four independent claims (claims 1, 30, 41 and 48) which correspond to granted claims 1, 33, 44 and 52 (see above point II). The dependent claims were amended so as not to exceed the disclosure content of the claims of the earliest priority document.

XI. The arguments presented by the appellant in its written submissions and at the oral proceedings, insofar as they are relevant for the present decision, may be summarised as follows:

- The subject-matter of claim 1 lacked novelty in view of the disclosure of D1. The coated chewing gums therein disclosed included polyvinyl acetate, a polymer fulfilling the degradation requirements

of claim 1, as confirmed by the disclosure of documents D2 and D8a.

- The subject-matter of claim 1 also lacked novelty in view of D13, which teaches chewing gums containing degradable condensation polymers and its use in the preparation of confectionery coated chewing gum compositions. Although D13 was silent about the coating ratio used, the range covered by claim 1 of the patent was extremely broad and encompassed all coating ratios which the skilled person would contemplate when applying the pan coating of D13. This objection was supported by the newly filed evidence D14 to D22 and the declaration D26.

- Starting from D5 as closest prior art document the claimed subject-matter lacked inventive step. It was obvious for the skilled person in the field to coat the chewing gum centres to protect ingredients which were sensitive and to improve the shell life of the chewing gums. In fact, coating was a well known measure used for hundreds of years to reduce the degradation of products over time by protecting the centre from environmental influences.

XII. The arguments of the respondent may be summarised as follows:

- Documents D28 to D36 should not be admitted into the proceedings because they were filed only shortly before the oral proceedings and were not more relevant that the evidence already on file.

- Neither D1 nor D13 were novelty destroying for the claimed subject-matter. The polyvinyl acetate used in D1 was a conventional, non-degradable polymer, not embraced by the present claims. The disclosure of D13 was silent about the thickness of the coating. The claimed coating range was neither explicit not implicitly disclosed.

- Concerning inventive step the respondent saw any of documents D5, D6 or D7 as representing the closest prior art. Regardless of which of these documents was taken as the closest prior art, the claimed subject-matter was distinguished by its requirement for a coating. The coating now used reduced pre-degradation of the gum composition, which in turn improved the masticatory quality of the gum. At the date of the invention it was expected that degradation during storage would be negligible. On the contrary, the examples in the patent showed that control gums degraded during storage and that this degradation could be reduced with coating. The recognition of this effect and its use for improving the masticatory quality of the chewing gums was a surprising finding, not derivable from the cited prior art and one that justified an inventive step for the claimed subject-matter.

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

The respondent requested that the decision under appeal be set aside and the patent be maintained on the basis of the main request filed with the letter dated 17 January 2014.

Reasons for the Decision

1. The appeal is admissible.

2. Admissibility of D28 to D36

2.1 The respondent requested that documents D28 to D36, filed by the appellant on 24 January 2014, that is to say less than one month before the oral proceedings, be not admitted into the proceedings as being late-filed.

2.2 As admitted by the appellant during the oral proceedings, documents D28 to D36 were filed in order to provide further general background on the issues of biodegradability and coating. However, these documents are not more relevant than other prior art documents already filed by the appellant for the same reasons, namely documents D13 to D27.

2.3 Thus the board, exercising its discretion under Article 13(1) RPBA, did not admit them into the appeal proceedings.

3. *Novelty*

3.1 Claim 1 is directed to a coated chewing gum having the following features:

(a) 25 to 99.9% by weight of a chewing gum centre comprising
(a1) at least one environmentally degradable elastomeric or resinous polymer containing bonds that are chemically unstable; and
(b) 0.1 to 75% by weight of an outer coating.

3.2 Novelty of the subject-matter of claim 1 has been contested by the appellant in view of the disclosure of documents D1 and D13.

3.3 Document D1

3.3.1 D1 discloses coated chewing gums (page 4, lines 3 to 4) comprising a chewing gum core having a water-insoluble chewable gum base portion (page 17, line 25). The insoluble gum base can constitute about 5% to 95% by weight of the chewing gum (page 17, lines 31 to 32) and the coating may be about 20% to about 75% by weight of the total gum product (page 22, lines 7 to 9). The chewing gum base contains synthetic elastomers and may include polyvinyl acetate (page 18, line 15).

In the appellant's view the disclosure of D1 is novelty destroying because polyvinyl acetate is an environmentally degradable elastomeric polymer falling within the broad scope of claim 1, which only requires that the polymer therein used "contains bonds that are chemically unstable", without any further limitation.

3.3.2 The board does not find this argument convincing. Polyvinyl acetate is, in the context of chewing gum formulations, a conventional non-degradable polymer and consequently not falling within the scope of the claim (cf. claim 1, feature (a1)). This is implicit in the wording of the claim which relates to a coated "chewing gum" comprising at least "one environmentally degradable elastomeric or resinous polymer". The environmentally degradable conditions therein referred are indoor and outdoor locations where people get rid of their chewing gums.

3.3.3 This finding is confirmed by documents D7 and D13 and the specification of the patent in suit:

- D7, a document originating from the appellant itself, refers to polyvinyl acetate as a synthetic polymer inherently resistant to biodegradation (page 1, lines 29 and 30 and page 7, lines 15 to 19). Thus, D7 confirms that, in the field of chewing gum, polyvinyl acetate is considered as a non-degradable polymer.

- D13 aims to provide improved degradable gum bases and refers in its introduction to polyvinyl acetate as a commonly used component of chewing gum bases (page 2, first paragraph) being of limited degradability (page 2, lines 7 to 8).

- Lastly, the patent in suit refers to polyvinyl acetate as a non-degradable polymeric elastomer which may be added to the one or more degradable polymers of the claimed chewing gum (see paragraphs [0033] and [0034]; see also example 6, referring to polyisobutylene and to polyvinyl acetate as non-degradable polymers).

3.3.4 Insofar as the appellant relies on documents D2 and D8a to support that polyvinyl acetate is an environmentally degradable polymer it is noted that D8a does not relate to the field of chewing gum and can therefore give no information on the question whether polyvinyl acetate is to be considered a degradable chewing gum component or not. Concerning D2, it discloses that a novel metabolizing bacterium can degrade polyvinyl acetate to some extent. This does not mean, however, that polyvinyl acetate is a degradable polymer as required by the claim. This bacterium is not present in the

locations where people are likely to get rid of their chewing gums.

3.3.5 In summary, the disclosure of D1 does not anticipate the subject-matter of claim 1 because the polyvinyl acetate therein used would not be thought of by the skilled person as a non-degradable polymer which meets requirement (a1) of claim 1.

3.4 Document D13

3.4.1 Document D13 discloses degradable gum bases comprising at least one degradable copolymer of a first monomer which is polymerizable by condensation polymerization and a second monomer which is copolymerizable with the first monomer (claim 1). The gum formulations may be further processed, as known in the art, for instance in the preparation of confectionery coated chewing gum compositions using a revolving coating pan (page 9, first paragraph).

3.4.2 The disclosure of D13 is not novelty destroying because it fails to disclose that the amount of coating should be in the range of 0.1 to 75% by weight as required by claim 1 (cf. claim 1, feature (b)).

3.4.3 The appellant admitted that this feature was not disclosed in D13 but maintained that in any case D13 was novelty destroying because the range covered by claim 1 is extremely broad and would encompass all coating ratios which the skilled person would contemplate using with the pan coated compositions of D13. The appellant submitted documents D14 to D22 and D26 as evidence of the common general knowledge relating to coating levels which can be achieved using the pan coating technique used in D13.

3.4.4 The board agrees with the appellant and with the declaration of Mr. Fritz (D26) that the coating levels achieved with pan coating would probably fall within the scope of the claimed range. However, the fact remains that D13 does not disclose the amount of coating used. In fact there is no exemplified coating in D13, and all that is said is that the gum formulation may be further processed as known in the art, for instance in the preparation of coated chewing gum. Consequently, D13 does not clearly and unmistakably disclose an embodiment covered by claim 1.

3.5 For these reasons the subject-matter of claim 1 is novel.

4. Inventive step

4.1 The invention relates to coated chewing gum products having chewing gum centres comprising degradable elastomeric or resinous polymers, the presence of which renders chewed gum that is dropped more prone to degradation in the environment or easier to remove from surfaces (see [0001]).

4.2 Chewing gums made from synthetic polymers having in their polymer chains chemically unstable bonds that can be broken under the influence of light or hydrolytically into water soluble and non-toxic components, that is to say biodegradable polymers, are already known and disclosed, for instance, in documents D5, D6 and D7. Thus, D5 discloses biodegradable chewing gums comprising as gum base at least one biodegradable polymer selected from polyesters and polycarbonates (see Abstract) and D6 and D7 disclose chewing gum bases and resultant chewing gums that include biodegradable

copolymer elastomers based on lactic acid, namely copolymers selected from the group consisting of poly(lactic acid-dimer fatty acid-oxazoline) copolymers and poly(lactic acid-diol-urethane) copolymers (see D6, claim 1), and poly(D,L-lactide acid) and poly(D,L-lactide acid-co-glycolic acid) (see D7, claim 1).

Therefore, in line with opposition division's decision and the approach chosen by both parties, any of D5, D6 or D7 can be considered to represent the closest prior art document.

4.3 According to the respondent chewing gum bases as used in D5 to D7 give rise to product stability problems, such as the degradation, something which is intended to take place after chewing of the gum, but which may occur at a significant level during storage of such degradable chewing gum products. This pre-degradation thus has a deleterious effect on the masticatory quality of the chewing gum (see [0008]).

4.4 The technical problem which the patent aims to solve is, according to the respondent, to provide chewing gums comprising degradable elastomeric polymers which do not degrade during storage and thus maintain their masticatory quality.

4.5 As a solution to this problem the patent proposes the **coated** chewing gums of claim 1, including 0.1 to 75% of an outer coating.

4.6 Example 13 of the patent shows that this problem has been credibly solved by the claimed coated chewing gums. In this example, the storage stability under ambient environmental conditions (21°C at a a relative humidity of 55%) of coated and non-coated chewing gum

centres was measured. The molecular weight of a non-coated chewing gum centre decreases after 3 weeks of storage to about 62% of the initial value, while the molecular weight of the same centre coated with sorbitol decreases only to about 84% of its initial value. This example confirms that degradable polymers containing unstable bonds are broken under ambient environmental conditions and that this degradation is reduced when coated.

The board is therefore satisfied that the above mentioned technical problem has been credibly solved by the claimed coated chewing gums of claim 1. This finding was not contested by the appellant.

4.7 Obviousness

4.7.1 As set out in the patent in suit, the claimed solution is based on the realisation that the use of an environmentally degradable chewing gum base component gives rise to product stability problems during storage under ambient conditions. This pre-degradation has a deleterious effect on the masticatory quality of the chewing gum.

4.7.2 Firstly, none of the prior art documents using biodegradable chewing gum bases recognizes this problem. None of D5, D6 or D7 mentions the pre-degradation as a possible drawback to the use of biodegradable gum bases and none of the chewing gums therein exemplified includes a coating (cf. D5, examples 1 to 4; D6, examples 5 and 7 and D7 example 22).

4.7.3 Secondly, it was argued by the respondent during the oral proceedings that, at the priority date of the

patent, pre-degradation of chewing gum bases was not considered a problem; it was believed that the degradation during storage would be negligible. In fact, it was expected that degradation would start under conditions of high moisture, namely by water uptake through chewing or rain once the gums has been disposed of. The board has no reason to doubt the correctness of this affirmation of the respondent.

4.7.4 On the other hand, it is acknowledged that coating forms part of the common general knowledge in the chewing gum field. This is, however, in the conventional case of non-degradable elastomers made for different purposes, namely to provide a candy-like, crunchy outer layer which offers a contrasting texture to the underlying gum centre. This is evident from the several documents cited by the appellant during the appeal proceedings relating to coating, see e.g. D14, column 1, lines 10 to 13; D15, column 1, lines 14 to 16; D17, page 2, lines 5 to 7 and/or D26, page 5, lines 4 to 6.

It is also not disputed that coating has been used to to maintain a stable moisture-content of the chewing gum by reducing the potential for both moisture loss and moisture absorption during storage (D24, page 1, first paragraph) or to protect sensitive core ingredients from decomposition (D22, page 2, line 11). However, none of the documents cited aim to protect the polymer from degradation. D22 does not mention chewing gums at all and D24 uses coating to maintain a stable moisture content.

4.7.5 It is thus apparent that the technical contribution of the patent in suit resides in identifying a problem which was hitherto not recognized in the prior art,

namely the need of protection during storage at ambient environmental conditions of a chewing gum base comprising environmentally degradable polymers. As held in T 2/83 (OJ EPO 1984, 265), relating to so called "problem inventions", the discovery of a hitherto unrecognised problem may in certain circumstances give rise to patentable subject-matter. According to that decision, this may the case even in the situation that the solution claimed is retrospectively trivial and obvious.

4.7.6 Under these circumstances the arguments of the appellant that the claimed invention lacked inventive step because coating was well known to reduce degradation over time are not relevant. The board acknowledges an inventive step not because the claimed solution is not obvious in view of the prior art but because the perception of the problem has to be considered as being the main contribution to inventive merits of the solution claimed.

4.7.7 The board would arrive at the same conclusion if document D13 would be considered as pre-published prior art document. As discussed above in point 3.4 above in relation to novelty, D13 discloses degradable copolymers for chewing gum base, which may be further processed as known in the art, for instance in the preparation of confectionery chewing gum compositions. However, D13 also fails to recognize the problem underlying the present invention and is therefore no more relevant than documents D5 to D7 discussed above. Under these circumstances, there is no need for the board to investigate whether the claimed priority is partially valid as argued by the respondent.

4.8 In view of the above, the board concludes that the subject-matter of claim 1 involves an inventive step. By the same token, the subject-matter of claims 30, 41 and 48, which relates to methods of preparation of coated chewing gums embraced by claim 1, and the subject-matter of dependent claims 2 to 29, 31 to 40, 42 to 47 and 50 to 52, also involves an inventive step.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order to maintain the patent on the basis of:

   (a) Claims 1 to 52 of the main request as filed with the letter dated 17 January 2014;
   (b) The description pages numbered 2 to 20 as granted.

The Registrar: The Chairman:

M. Cañueto Carbajo W. Sieber

Decision electronically authenticated