

Internal distribution code:

- (A) [] Publication in OJ
(B) [] To Chairmen and Members
(C) [X] To Chairmen

D E C I S I O N
of 14 November 1994

Case Number: T 0423/92 - 3.3.2

Application Number: 84111693.2

Publication Number: 0140184

IPC: A22C 13/00

Language of the proceedings: EN

Title of invention:
Food casing and method of preparing same

Patentee:
VISKASE CORPORATION

Opponent:
HOECHST AKTIENGESELLSCHAFT, Werk Kalle-Albert
Wolff Walsrode AG

Headword:
Food casing/VISKASE

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (yes) - non-obvious improvement"

Decisions cited:
T 0004/80, T 0219/83, T 0197/86

Catchword:



— Case Number: T 0423/92 - 3.3.2

DECISION
of the Technical Board of Appeal 3.3.2
of 14 November 1994

Appellant:
(Opponent 01)

HOECHST AKTIENGESELLSCHAFT
Werk Kalle-Albert
Zentrale Patentabteilung KA
D-65174 Wiesbaden (DE)

Representative:

Appellant:
(Opponent 02)

Wolff Walsrode AG
Postfach
D-29655 Walsrode (DE)

Representative:

Zobel, Manfred, Dr.
BAYER AG
Konzernverwaltung RP
Patente Konzern
D-51368 Leverkusen (DE)

Respondent:
(Proprietor of the patent)

VISKASE CORPORATION
6855 West 65th Street
Chicago, Illinois 60638 (US)

Representative:

Eggert, Hans-Gunther, Dr.
Räderscheidtstrasse 1
D-50935 Köln (DE)

Decision under appeal:

Interlocutory decision of the Opposition Division
of the European Patent Office dated 25 March 1992
concerning maintenance of European patent
No. 0 140 184 in amended form.

Composition of the Board:

Chairman: P. A. M. Lançon
Members: A. J. Nuss
J. A. Stephens-Ofner

Summary of Facts and Submissions

I. European patent No. 0 140 184 concerning a peelable tubular cellulosic casing and based on application No. 84 111 693.2 was granted on the basis of seventeen claims.

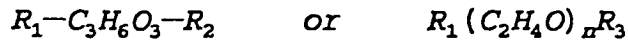
II. Notice of opposition was filed against the European patent by the present Appellants (Opponent 01 and 02). From the documents cited in support of the opposition only the following remained finally relevant in this appeal:

- (1) EP-A-0 101 892
- (2) US-A-3 898 348
- (7) DE-A-2 300 338

III. In accordance with the interlocutory decision under appeal, the Opposition Division decided to maintain the patent in amended form.

Claim 1 reads as follows:

"1. A peelable tubular cellulosic casing having a coating over the internal surface thereof, said coating comprising at least two components, including a first component being a water-soluble cellulose ether, and a second component being an oil selected from the group consisting of animal and vegetable oils, mineral oil and silicone oils, said casing being suitable for stuffing with food products and being readily peelable from food products processed therein, characterized in a third component being at least one water insoluble alkylene oxide adduct of fatty acids or fatty acid partial esters having a hydrophilic-lipophilic balance (HLB) number of between 10 and 13, represented by the formulas



wherein R_1 is a long chain fatty acid radical having 10 to 24 carbon atoms; and R_2 is $-(C_2H_4O)_nH$ wherein n is an integer from 1 to 40, and wherein R_3 is hydrogen or a long chain fatty acid radical having 10 to 24 carbon atoms,

said first component being present in an amount of from more than 0.005 to 0.07 mg/in² (7.8 to 109,2 mg/m²), said second component being present in said coating in an amount of from 0.001 to 3 mg/in² (1.6 to 4650 mg/m²) of casing surface, and said third component being present in an amount of from 0.005 to 0.1 mg/in² (7.8 to 155 mg/m²) of internal casing surface, except such casings wherein the second component is present in an amount of more than 15 times of the first component."

The Opposition Division took the view that the claimed product was novel and that the closest prior art was represented by coating compositions for food casings of the claimed type comprising however the known emulsifier Tween 80. A detailed discussion of the experimental data led to the conclusion that the results presented in Table V of the patent in suit showed that the problem of improving the coherency of a tubular cellulosic casing was solved by selecting an emulsifier having a particular HLB number. Since the prior art did not provide any incentive to use an emulsifier with an HLB number of between 10 and 13 instead of 15 (i.e. the one for Tween 80) when trying to improve said coherency, the claimed solution was held to involve an inventive step.

IV. The two Appellants lodged an appeal against this decision.

Oral proceedings were held on 14 November 1994.

At the beginning of the oral proceedings, the Appellants confirmed that the only point at issue was that of inventive step under Article 56 EPC.

In their written submissions and at the oral proceedings before the Board, they argued, in essence, that the Opposition Division did not draw the right conclusions from Table V, and objected, in particular, that from a large group of examples merely a few results had been picked out so that there existed no credible basis for the assertion that the problem stated in the patent has been solved.

As could be seen from a graphical representation of the results of all the examples and comparative examples in the patent in suit, there was no support for a relationship between the HLB number of the emulsifier to be used in the claimed invention, i.e. the only relevant parameter, and the coherency of the cellulosic casing thus obtained. Moreover, it was questionable whether an emulsifier with an HLB number of 13 could be distinguished from one with an HLB number of 15 which characterizes the prior art emulsifier Tween 80. It was therefore not credible to explain the alleged effect of improving the coherency solely by reference to the difference between the HLB numbers of the emulsifiers now claimed, and those known from the prior art. On the contrary, the emulsifier obviously only served as the means for distributing the oil component over the inner surface of the casing without having any influence on the cellulose ether component. Thus from the three problems set out in the patent in suit, namely achieving stability of the shirred casing sticks, low modal deshirring force and easy peelability, the first two

were in no way related to the HLB number of the emulsifier. It was well known in the art that the stability of the shirred casing sticks depended not only on the shirring process as such but also on the diameter of the shirring mandrel as well as the amount of oil and water in the coating formulation. However, coating formulations 1 to 3 of Example 1 of the patent in suit containing varying amounts of water and equal amounts of carboxymethyl cellulose, mineral oil and coating additive showed a so-called "cloud" of measuring points, with no dependency on the water content. Although one could accept on the basis of these examples that the modal deshirr force of the cellulosic casings was not lowered, the values of 90% and 91% respectively indicated in Table V for phase separation after 72 hours in connection with further embodiments of the alleged invention, showed that the latter formulations were disadvantageous in comparison with prior art formulations using Tween 80 which provided 0% phase separation after 72 hours. Furthermore, since different batches of cellulosic casings having identical formulations were said to be not comparable, it was questionable whether the patent in suit provided a proper solution throughout the claimed range.

They argued that for the question of deciding the issue of inventive step, document (2) which used Tween 80 as an emulsifier, should be regarded as representing the closest prior art. However, it was obvious to combine the teaching of this document which reported in Table 16 a high coherency (4.0 inch-lbs.) with that of document (7) in which emulsifiers having an HLB number of between 10 and 13 e.g. glycerinpolyethoxy(20)monostearat with an HLB number of 11.6) and falling under the general formula of Claim 1 of the patent in suit, were used in coating formulations for foodstuff casings. As regards

the present limitation to water insoluble alkylene oxide adducts, one should take into account that each emulsifier contained hydrophilic and lipophilic groups and that an HLB-number of 10 represents nothing else than the balance between the water soluble and water insoluble behaviour of such compounds, whereby above 10 the emulsifier was to be regarded as water soluble. Since furthermore the easy peelability, i.e. the third technical aspect mentioned in the patent in suit had already been solved in document (2) and (7), the claimed invention represented vis-à-vis these known cellulosic casing only a non-inventive alternative.

- V. The Respondent (Proprietor of the patent) argued that for the assessment of inventive step of the claimed peelable cellulosic casings, it was not appropriate to consider solely the coherency aspect. In order to be technically meaningful, the actual problem underlying the patent in suit had to be construed more narrowly, namely, to provide a tubular cellulosic food casing having an improved coherency when the casing was shirred, and which could be readily deshirred when using high speed automatic machines. The Appellants therefore not only drew the wrong conclusion when comparing the experimental data in the patent in suit, but also compared coated casings obtained from different batches, contrary to the requirement in the patent in suit that comparisons should be based on the same batch of casing. Consequently, Table V of the patent in suit should be taken as it stood. They also submitted that the man skilled in the art had no reason to combine the teaching of document (2) with that of document (7), since the latter was clearly not concerned with easy peelable foodstuff casings of the claimed type, i.e. casings in which the presence of a water-soluble cellulose ether is compulsory.

VI. The Appellants requested that the decision under appeal be set aside and the European patent No. 0 140 184 be revoked.

The Respondent requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.
2. Neither the Appellants nor the Board raised any objection against the present amended version of the claims (see point III above) under Article 123(2) and (3) EPC or Article 84 EPC, for the reasons that these claims appeared to be clear and concise, adequately supported by the original description (see in particular page 1, line 65 up to page 2, line 30 of the patent in suit and pages 4/5 section "Summary of the Invention" of the description originally filed) and do not extend the protection conferred when compared to the claims as granted. The disclaimer introduced in Claim 1 at the opposition stage was justified in view of the disclosure contained in document (1) cited under Article 54(3) and (4) EPC. The corresponding exclusion of particular coating formulations by the phrase "except such casings wherein the second component is present in an amount of more than 15 times of the first component", was clearly based on the disclosure of this document, page 15, lines 27 to 30 (cf. T 4/80, OJ EPO, 82, 149).

The requirements of Articles 123 and 84 EPC were thus satisfied for all the claims.

3. None of the documents cited under Article 54(2) EPC disclose a peelable tubular cellulosic casing comprising all the features of present Claim 1 and the subject-matter of document (1), the only document cited under Article 54(3) EPC is no longer claimed by the introduction of the aforementioned disclaimer. This was not contested by the Appellants. The said claim is therefore novel.

4. The patent in suit relates to a peelable tubular cellulosic casing having a coating over the internal surface and suitable for stuffing with food products. It was undisputed during the appeal proceedings that the closest prior art was document (2) and the Board has no reason to adopt a different view.

4.1 Document (2) which refers to Tween 80 as an emulsifier in coating compositions for tubular cellulosic food casings comprising two obligatory components (i.e. a water-soluble cellulose ether (first component) and an oil or a water-soluble alkylene oxide adduct (second respective third component)), describes all the features of the precharacterizing part of present Claim 1 and, furthermore, mentions amounts for the components of the coating composition which fall within the ranges set out in the characterizing part of Claim 1, including that for the emulsifier used but without requiring however a water **insoluble** alkylene oxide adduct as an **obligatory** third component in addition to the oil as second component (see col. 2, lines 29 to 47; col. 3, lines 19 to 35 and col. 4, lines 8 to 21).

It is stated in particular there that a suitable second component is a member selected from the group consisting of animal and vegetable oils, mineral oil, silicone oils and preferably a water soluble alkylene oxide adducts of

fatty acid partial esters. Preferably these materials should be water soluble, but materials that are in a dispersible form in aqueous solution for example an aqueous emulsion of castor oil or mineral oil are not excluded (cf. col. 4, lines 27 to 34). It is then proposed that the water-soluble alkylene oxide adducts of fatty acid partial esters such as the commercially available materials under the trademark "Tween" are particularly suitable (cf. col. 4, lines 35 to 43).

These known coating compositions are stated to respond to the problem of providing a shirred tubular food casing that is suitable for the processing of sausage products and is readily released from the sausage processed therein by the use of high speed, automatic sausage peeling machines (cf. col. 1, line 51 to col. 2, line 28).

The cohesive strength or "coherency" is mentioned as an important property of the shirred casing stick to ensure trouble-free operation with manual and automatic food stuffing apparatus. A coherency test method is described in detail (see col. 6, line 39 up to col. 7, line 17).

With the exception of the compositions disclosed in Example XV summarized in Tables 18 to 20, none of the examples of document (2) describes Tween 80 in combination with an oil. This example is stated to illustrate the suitability of various proportions of mineral and vegetable oils in conjunction with the cellulose ether component in preparing shirred tubular casings having improved peelability characteristics. Each of the casing samples except the control (no oil, no emulsifier), shows 100% peelability. The coating compositions "B", "E", "H", "J", "M" and "P" disclosed there comprise 1 wt% carboxymethylcellulose, at least 78

wt% water and propylene glycol; 10, 15 or 20 wt% of castor oil or mineral oil, and either 0.08 or 1 wt% of "Tween 80" as ingredients. The corresponding coherency values are 0.5-1.5, 1.5, 2.1, 0.6, 0.7 and 1.8 (inch.-lbs.) respectively. It was found that from these casing samples "B", "J" and "M" were readily broken and that the casing sticks would be generally unsuitable for commercial use. The other casing samples "A", "D", "G", "L" and "O" also referred to in Example XV and comprising castor oil or mineral oil, but not in admixture with either Tween 80 or Surfactol 365 (i.e. a commercially mixture of water dispersible fatty acid ester surface active agents), show coherency values of about 3.0 inch.-lbs. Sample "R" using only Tween 80 without an oil shows a coherency of 3.4 inch.-lbs.

Although Example XV does not contain any experimental data which demonstrates the modal deshirring force of the casing sticks, it has been found that these known coatings, while providing excellent release properties, at times leave something to be desired in terms of shirred stick coherency (cf. page 2, lines 54/55 of the patent in suit).

- 4.2 In relation to document (2), the problem underlying the patent in suit can be seen in providing a peelable tubular cellulosic casing for stuffing with food products having an improved shirred stick coherency without impairing the modal deshirring force of the casing. The problem is solved by the cellulosic casing in accordance with present Claim 1 and which has in particular, over its internal surface a coating comprising at least one water **insoluble** alkylene oxide adduct of fatty acids or fatty acid partial esters having a hydrophilic-lipophilic balance (HLB) number of between 10 and 13.

4.3 Having regard to Example 2, Table V of the patent in suit, in particular "Formulations 7 to 9", i.e. coating compositions in accordance with the claimed invention, which are compared with a "Formulation E" using instead of the claimed insoluble adduct the known water soluble Tween 80 emulsifier (HLB=15) and leading on the one hand to an increase in coherency of at least 0.9 inch.-lbs. while maintaining the modal desherr force at the comparison value of 0.37 lbs. and on the other hand to an increase in coherency of 1.5 inch.-lbs. with a modal desherr force not above 0.52 lbs. but well below the favoured 0.55 lbs, the Board is satisfied that the problem has been plausibly solved (see "deshirring force test", page 5, lines 55/56 of the patent in suit).

4.3.1 In deciding upon the problem to be solved and, also in deciding whether the stated problem has been credibly solved, the Board took into account that the Appellants and the Respondent have both made conflicting interpretations of the examples of the patent in suit. However, the Appellants' argument that the examples as a whole, thus also those in Table V, would not show a statistical significant improvement of the coherency values did not convince the Board.

At the oral proceedings the Appellants did not deny that they have simply ignored what was said in the patent in suit about comparisons when using casings from different batches, namely that "It is well-established that comparisons should be based on the **same batch** (emphasis added) of casing" (see page 8, lines 1 to 5) and also that "In comparing results, it is necessary to compare casings...made at the **same time from the same lot of casings** (emphasis added)" (see page 8, lines 18/19).

Since the Appellants have submitted nothing which would show that these "warnings" make no technical sense or does not correspond to what is experienced in practice, the Board has considered as relevant only **true comparisons** in the above sense, in particular those to be made in Table V of the patent in suit on the basis of Formulations 7 to 9 and comparison Formulation E.

The validity of such comparisons (cf. point 4.3 above) is not impaired by the fact that "Comparison Formulation E" must be regarded as a variant of the closest state of the art represented by document (2). The advantageous effect attributable to the distinguishing features of the claimed invention is thereby more clearly demonstrated. This is certainly the case with the said "Formulation E" because this coating composition lies definitely closer to the invention than any of the many examples disclosed in (2) (cf. decision T 197/86, point 6.1.3 of the reasons for the decision).

- 4.3.2 In the absence of evidence to the contrary, the Board has also no reason to doubt that the HLB numbers mentioned in the present claims allow to distinguish the corresponding emulsifiers from known ones having different HLB numbers, so that a comparison between what is known and what is claimed can well be made when discussing inventive step (cf. T 219/83, OJ-EPO, 1986, 211).

The Board also notes that when discussing the experimental results presented in Table V, large parts of the Appellants' arguments related to Article 83 EPC. However, since, at the beginning of the oral proceedings both Appellants had explicitly confirmed that in the

present appeal proceedings the only point at issue was the question of inventive step under Article 56 EPC, the Board has excluded all other issues.

5. It therefore remains to be decided whether or not the claim in suit satisfies the requirements of Article 56 EPC.

5.1 As the relevant examples of the closest prior art discussed in point 4.1 above show that, apart from their excellent peelability properties, the coating compositions comprising "Tween 80" in combination with either mineral oil or castor oil lead to coherency values significantly below those of the said substances when used alone, there existed no reason for the skilled man to suspect that the underlying problem could be solved by using an oil in conjunction with a specific alkylene oxide adduct, namely an insoluble one with an HLB number between 10 and 13.

Moreover, document (2) is completely silent on any possible relationship between the **HLB number** of the emulsifier used there and relevant properties of the coated casings when used as shirred sticks.

5.2 The Board accepts the Appellant's submission that the skilled person would have been aware of document (7), which relates to coating compositions for food casings comprising a number of emulsifiers which obviously have an HLB-number as now claimed, i.e. between 10 and 13. This document, however, concerns a totally different type of composition; such a coating composition typically contains between 40 wt% to 50 wt% of mineral oil in admixture with 40 wt% to 50 wt% of acetylated fatty acid monoglycerid but neither water nor a water soluble cellulose ether (cf. page 9, Table). Moreover,

this document contains nothing which would indicate to the skilled person that the HLB number is a critical parameter for any of the properties usually required by a shirred casing stick; its relevance clearly does not reach that of document (2).

There would thus have been no incentive for the skilled person to combine any technical feature(s) disclosed in these two documents in order to arrive at the claimed solution.

It follows that the subject-matter of Claim 1 involves an inventive step in the sense of Article 56 EPC.

- 5.3 The same applies to dependent Claims 2 to 9, which relate to particular embodiments of the cellulosic casing according to Claim 1.

- 5.4 The above findings further show that neither the subject-matter of method Claims 10 to 16 nor that of Claim 17, which relates to an encased foodstuff, is rendered obvious by the cited prior art since these claims also involve a coating composition in accordance with Claim 1.

Consequently, these claims also involve an inventive step.

- 6. Accordingly, there are no grounds which prejudice the maintenance of the patent in the amended form in which it was maintained by the Opposition Division.

- Order

For these reasons it is decided that:

1. The appeal is dismissed.

The Registrar:



P. Martorana

The Chairman:



P.A.M. Lançon

