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Bezeichnung der Erfindung: Dental compositions comprising a selected vinyl  
Title of invention: urethane prepolymer and processes for their manufacture  
Titre de l'invention :

Klassifikation / Classification / Classement : A 61 K 6/08

### ENTSCHEIDUNG / DECISION

vom / of / du 1 September 1987

Anmelder / Applicant / Demandeur :

Patentinhaber / Proprietor of the patent /  
Titulaire du brevet :

Imperial Chemical Industries PLC

Einsprechender / Opponent / Opposant :

01 Blendax-Werke R. Schneider GmbH & Co.  
02 Etablissement Dentaire Ivoclar

Stichwort / Headword / Référence :

EPO / EPC / CBE Articles 52(1), 54, 123(3) EPC

Kennwort / Keyword / Mot clé : "Novelty denied" "Change of category of claim"

Leitsatz / Headnote / Sommaire

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Case Number : T 98 /85

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.1  
of 1 September 1987

**Appellant :**  
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**Decision under appeal :**              Interlocutory decision of the Opposition Division of  
the European Patent Office dated 20 February 1985  
concerning maintenance of European Patent  
No. 0 012 535 in amended form.

**Composition of the Board :**

**Chairman :** K. Jahn

**Members :** C. Gérardin

E. Persson

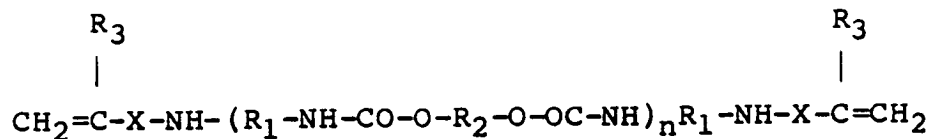
### Summary of Facts and Submissions

- I. The mention of the grant of the patent No. 12 535 in respect of European patent application No. 79 302 671.7 filed on 22 November 1979 and claiming priorities of 18 December 1978 and 4 April 1979 from two earlier applications GB-4 896 778 and GB-7 911 709, was announced on 19 January 1983 on the basis of 11 claims.

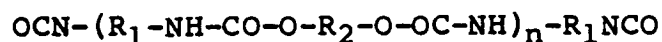
Claim 1 reads as follows:

"A liquid dental composition which comprises:

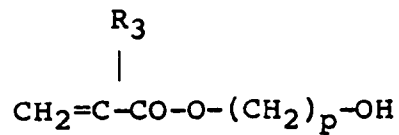
(A) a polymerisable vinyl urethane prepolymer having the structure:



which is the reaction product of (a) a urethane prepolymer having the structure:



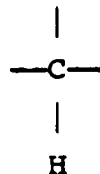
which is itself the product of the reaction of an organic diisocyanate having the structure  $\text{OCN}-\text{R}_1-\text{NCO}$  and a diol having the structure  $\text{HO}-\text{R}_2-\text{OH}$ , and (b) a liquid ethylenically unsaturated monomer having the structure:



in which  $R_1$  is a divalent hydrocarbyl group and at least 80% of the units  $R_1$  are aliphatic and contain four to eight carbon atoms,  $R_2$  is the residue of a condensate of an alkylene oxide with a compound containing two phenolic groups or the residue of an alkylene glycol,  $R_3$  is a hydrogen atom or a methyl group,  $n$  is an integer and  $p$  is a whole number of at least 2, and  $X$  is a divalent radical having the structure:  $-CO-O-(CH_2)_p-O-CO-$  in which one or more of the hydrogen atoms in the group  $-(CH_2)_p-$  may be substituted by a hydrocarbyl group,

(B) 50% to 150% by weight of A. of a liquid glycol acrylate or methacrylate, and a photosensitive catalyst which comprises

(C) at least one organic amine having the structure  $R_3N$  in which the units  $R$ , which may be the same or different, are hydrogen atoms, hydrocarbyl groups, substituted hydrocarbyl groups or groups in which two units  $R$  together with the nitrogen atom form a cyclic ring system, no more than two of the units  $R$  being hydrogen atoms and where the nitrogen atom is attached directly to an aromatic group at least one of the groups  $R$  has a



group attached to the nitrogen atom, and

(D) at least one  $\alpha$ -diketone which is selected from norbornane dione and substituted derivatives thereof, characterised in that (C) is 0.25 to 0.75 parts by weight per 100 parts by weight of A + B and that D is 0.3 to 1.0 parts by weight per 100 parts by weight of A + B."

II. Appellant 1 (Opponent 1) filed an opposition against the grant of the patent on 5 September 1983 on grounds of lack of inventive step. The following documents were, inter alia, cited in support of the opposition:

- (1') AT-A-338 438
- (1") AT-A-338.436
- (2) FR-A-2 182 091.

Appellant 2 (Opponent 2) filed an opposition against the grant of the patent on 15 October 1983 on grounds of lack of novelty and inventive step. The whole argumentation was based on

- (1) DE-A-2 419 887

which corresponds to documents (1') and (1").

III. The Opposition Division rejected the oppositions in a decision of 20 February 1985 based on following arguments:

- (i) Novelty

Although the composition according to example 24A of document (1) contains the same ingredients (A) to (D) as the compositions claimed in the disputed patent, the ranges for the catalyst components (C) and (D) according to Claim 1, although covered

themselves by document (1), were considered as a selection. In contrast to the filler-free compositions as claimed, the prior art compositions require the presence of 75% by weight of filler.

Whereas the prior art compositions are paste-like, the present compositions are liquid.

(ii) Inventive step

The short setting time condition does not point to the particular composition of Example 24A since the composition according to Example 26 based on an aromatic diisocyanate has a comparable setting time.

Even if the toxicity of the amine (C) may be an incentive to lower the amounts thereof, it was considered as surprising that the amounts actually used could result in an acceptable setting time. The choice of a glycol diacrylate or dimethacrylate as component (B) and of a norbornane dione as component (D) leads to surprising results in terms of setting time in comparison with the compounds used respectively in Examples 5c and 6.

IV. Appellant 1 thereafter filed a notice of appeal with payment of the prescribed fee on 28 March 1985. Likewise, Appellant 2 filed a notice of appeal on 2 April 1985, paying the prescribed fee at the same date.

The arguments presented in the two statements of grounds filed on 15 May 1985 and 27 June 1985 respectively as well as during oral proceedings held on 1 September 1987 can be summarised as follows:

(i) Novelty

The composition according to Example 24A of document (1) should not be read in isolation, but in the context of the whole disclosure. According to page 23, paragraph 4 and page 27, paragraph 3, the catalyst components (C) and (D) should be used in amounts between 0.01 and 10%, preferably 0.5 to 5%, by weight per hundred parts by weight of polymerisable materials. The claimed ranges of 0.25 to 0.75% respectively 0.3 to 1% fall thus within the basic range and even overlap part of the preferred range.

The presence of fillers in the prior art compositions cannot be regarded as a distinguishing feature since the wording of Claim 1 of the disputed patent does not explicitly exclude them and the description even envisages their addition for colour purposes.

The adjective "liquid" cannot confer novelty since the known compositions are described as fluid.

The situation is comparable to the one which led to the decision T 17/85 wherein the Board did not acknowledge novelty.

(ii) Inventive step

Unlike the other prepolymers which are solid, the prepolymer based on hexamethylene diisocyanate (HDI) is a viscous rubber soluble in ethylene glycol dimethacrylate; this mixture becomes pasteous only after addition of the filler. Simple considerations of viscosity would thus lead the skilled man to the choice of the composition according to Example 24A.

The comparison of tensile strength and flexural modulus of the compositions according to Examples 24A, 24B, 25 and 26 shows that the compositions based on HDI have the best mechanical properties and cure faster than the compositions based on 4,4'-diisocyanatodiphenyl methane (MDI).

It is self-evident that the skilled man would try to lower the amount of amine (C) for toxicological reasons and the amount of  $\alpha$ -diketone (D) for colour purposes. Moreover, that lesser amounts of catalysts would still be suitable cannot be regarded as surprising since a thin dental fissure sealant is obviously easier to cure than a thick heavily filled dental filling composition.

The deletion of fillers is obvious in view of the lower viscosity required for dental fissure sealants than for dental filling compositions as well as in view of the teaching of document (2) which specifies that the same basic compositions are suitable for both applications.



The problem of inventive step should be tackled in the light of the decisions T 21/81, T 24/81 and T 192/82 of the Technical Boards of Appeal which all deal with similar cases.

- V. The Respondent (Patentee) who did not attend the oral proceedings filed a statement of rebuttal on 23 October 1985 based on following arguments:

(i) Novelty

The claimed compositions are dental fissure sealants which are liquid; by contrast the compositions described in document (1) are dental filling compositions which have a paste-like consistency and can be moulded under hand pressure.

The amounts of amine (C) and  $\alpha$ -diketone (D) according to Claim 1 of the disputed patent are not disclosed as such in document (1). Novelty is an absolute concept which means that it can only be destroyed by what has been explicitly described in the prior art. In this context reference is made to the decision T 198/84.

Whereas the prior art compositions are heavily filled, only a small level of filler without detrimental influence on the viscosity characteristics of the composition can be tolerated according to the disputed patent in order to achieve an optimal colour match.

(ii) Inventive step

Whilst the HDI prepolymer according to Example 24A is a viscous gum and the MDI prepolymer otherwise used is a solid, there is no hint that the viscosity of their mixtures with component (B) would be so dramatically different, as illustrated in examples 1(a) to 1(d) of the disputed patent.

The present fissure sealant compositions have exceptional reactivity which makes it possible to use a low level of catalyst for both (C) and (D); this serendipitous property has essential advantages in terms of toxicity and low colour.

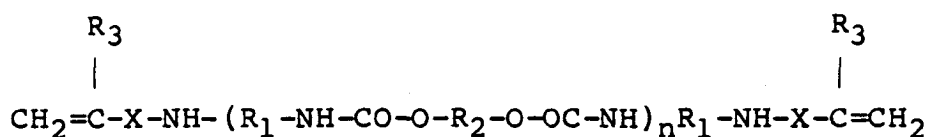
Variation of setting time with catalyst is not always predictable, as illustrated in Example 3 which shows that setting time does not necessarily decrease with increase in catalyst concentration. A further point to take into account is the difficulty to harden thin layers because of the air-inhibition effect.

As to the decisions mentioned by the Appellants, they basically relate to cases dealing with improvements to existing prior art; the situation is different here since a fissure sealant composition cannot be regarded in any sense as an "improvement" over dental filling compositions.

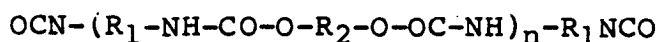
VI. Together with the above arguments, the Patentee submitted an alternative set of claims wherein Claim 1 and Claim 11 read as follows:

Claim 1: "A dental composition which comprises:

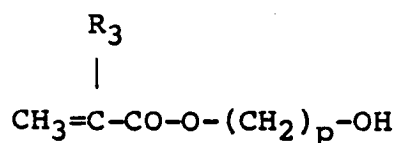
(A) a polymerisable vinyl urethane prepolymer having the structure:



which is the reaction product of (a) a urethane prepolymer having the structure:



which is itself the product of the reaction of an organic diisocyanate having the structure  $\text{OCN}-\text{R}_1-\text{NCO}$ , and (b) a liquid ethylenically unsaturated monomer having the structure:

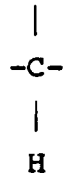


in which  $\text{R}_1$  is a divalent hydrocarbyl group,  $\text{R}_2$  is the residue of a condensate of an alkylene oxide with a compound containing two phenolic groups or the residue of an alkylene glycol,  $\text{R}_3$  is a hydrogen atom or a methyl group,  $n$  is an integer and  $p$  is a whole number of at

least 2, and X is a divalent radical having the structure:  $-\text{CO}-\text{O}-(\text{CH}_2)_p-\text{O}-\text{CO}-$  in which one or more of the hydrogen atoms in the group  $-(\text{CH}_2)_p-$  may be substituted by a hydrocarbyl group;

(B) a liquid glycol diacrylate or dimethacrylate, and a photosensitive catalyst which comprises

(C) at least one organic amine having the structure  $\text{R}_3\text{N}$  in which the units R, which may be the same or different are hydrogen atoms, hydrocarbyl groups, substituted hydrocarbyl groups in groups in which two units R together with the nitrogen atom form a cyclic ring system, no more than two of the units R being hydrogen atoms and where the nitrogen atom is attached directly to an aromatic group at least one of the groups R has a



group attached to the nitrogen atom, and

(D) at least one alpha-diketone which is selected from norbornane dione and substituted derivative thereof, characterised in that the composition is fluid, at least 80% of the units  $\text{R}_1$  are aliphatic and contain 4 to 8 carbon atoms, component B is present in amounts 50% to 150% by weight of A and (C) is 0.25 to 0.75 parts by weight per 100 parts by weight of A + B and (D) is 0.3 to 1.0 parts by weight per 100 parts by weight of A + B."

Claim 11: "The use of a liquid composition as claimed in any one of Claims 1 to 9 as a fissure sealant."

VII. The Appellants request the decision under appeal to be set aside and the patent be revoked.

The Respondent requests the appeals to be rejected.

#### Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.
2. Dental compositions comprising the same basic composition as the liquid dental composition according to Claim 1 of the disputed patent are generally known from document (1).
  - 2.1 According to the broadest definition thereof (Claims 1, 19 and 20) they contain essentially the following ingredients:
    - (A) vinyl urethane prepolymer
    - (B) unsaturated compound
    - (C) reducing agent
    - (D)  $\alpha$ -diketone sensitizer
    - (E) filler

The symbols (A) to (E) have been added for comparison purposes.

- 2.1.1 Component (A) derives from a urethane prepolymer whose isocyanate end-groups have been reacted with an unsaturated hydroxy compound (page 4, paragraphs 2 and 3). The structure of the diisocyanate itself is not critical and aromatic (page 11, paragraphs 2 and 3), cycloaliphatic (page 10, paragraph 3) as well as

aliphatic (page 12, paragraph 1) compounds are mentioned as equally appropriate. In the latter group hexamethylene diisocyanate is even explicitly cited.

2.1.2 Any monomer physiologically not objectionable would be suitable as compound (B) (page 17, paragraph 5). Although most of the monomers listed in the description are monounsaturated (page 18, paragraphs 1 to 4), ethylene glycol dimethacrylate is actually used in most of the compositions exemplified.

2.1.3 The amounts of catalyst components (C) and (D) are not described as particularly critical (page 19, paragraph 4 to page 20, paragraph 1).

The ranges for the reducing agent (C) as well as for the photosensitive (D) are between 0.01 and 10, preferably between 0.5 and 5, parts by weight per hundred parts of polymerisable components (A) and (B) (page 23, paragraph 4 and page 27, paragraph 3). The above basic ranges encompass the whole ranges for (C) and (D) according to Claim 1, 0.25 to 0.75% for (C) and 0.3 to 1.0% for (D), and even the preferred ranges overlap most of the ranges specified in Claim 1.

Example 13 shows that 0.025 parts of reducing agent (C) for 10 parts of polymerizable material (A) and (B) corresponding to a weight ratio of 0.25% are sufficient to provide a satisfactory result. This is exactly the lower limit of the range for the reducing agent according to Claim 1 of the disputed patent.

Similarly, the amounts of the catalyst mixture in the compositions according to Examples 7 to 12, namely 0.2 parts of a solution of 0.1 part of fluorenone in 4 parts of dimethylaminoethyl methacrylate for 10 parts of

polymerizable components (A) and (B), correspond to a proportion of 0.2% by weight of (D). This is even less than the amount of photosensitizer required according to Claim 1 of the disputed patent.

- 2.2 The four components (A) to (D) according to the claimed composition are not only enlisted in document (1) as examples of suitable components, they are even mentioned together in a single composition (Example 24A).

This specific composition contains the following ingredients, the amounts thereof being expressed in grams:

(A) viscous rubber	13.37
(B) ethylene glycol dimethacrylate	10.94
(C) dimethylaminoethyl methacrylate	0.625
(D) camphorquinone	0.0625
(E) borosilicate glass powder	75

The viscous rubber (A) is a prepolymer of oxypropylated Bisphenol A and HDI which has been reacted with 2-hydroxyethyl methacrylate in such amounts that the rubber contains two unsaturated end-groups. This rubber corresponds exactly to the definition of component (A) in the claimed compositions.

With regard to the reactive components (A) and (B) the proportions of the catalyst components (C) and (D) are 2.5 and 0.25% respectively. These compositions have a paste-like consistency.

The compositions according to Claim 1 of the disputed patent are defined as liquid, are silent on the content of a filler (E) and are characterised by generally lower

amounts of (C) and (D). These apparent differences will be discussed in the light of the whole disclosure of document (1) as suggested in the decision T 188/83, OJ 11/1984, 555, point 5.

- 2.3 The claimed compositions being defined as "comprising" (A) to (D), which is not a limitative formulation, the presence of other ingredients such as fillers is not excluded at all from the scope of Claim 1. The presence of a filler (E) in the composition according to document (1) cannot thus be regarded as a distinguishing feature.

The presence of fillers is in fact explicitly envisaged by the Patentee. In the description of the disputed patent it is stated that although the dental compositions are generally used in absence of filler, small quantities of filler may be included in order to improve the colour or the abrasion resistance (page 6, lines 54/55). It is further specified that the filler may have a particular or an irregular shape, that borosilicate glass would be a suitable filler (page 6, lines 57 to 59) and that the filler is preferably treated with a coupling agent in order to increase the strength of the bond with the cured composition (page 7, lines 1 to 5). These passages correspond exactly to the definition and the purpose of the fillers mentioned in document (1) (compare page 15, paragraph 3 to page 16, paragraph 1; page 16, paragraph 3 to page 17, paragraph 1).

As to the amounts of filler to be used, although the prior art mentions the broad range of 10 to 90% by weight, these limits are only given as examples (page 15, paragraph 3), which suggests that higher as well as lower



amounts would still be suitable. By contrast, the description of the disputed patent does not disclose specific amounts; the only requirement is that the quantity of filler must not be so high as substantially to modify viscosity characteristics (page 6, line 56). It has thus to be examined whether there is an unambiguous distinction in terms of viscosity between the known compositions and the claimed compositions as a result of this addition of filler.

- 2.4 Whilst the claimed compositions must be liquid, the prior art compositions are described as fluid compositions which have suitably a paste-like consistency (page 2, paragraphs 2 and 5; page 17, paragraph 3). Since there are only three states of aggregation corresponding to the three phases it can hardly be disputed that fluid or viscous compositions belong to liquid state; this means that part of the whole range of viscosity corresponding to liquid state claimed by the Patentee is already known from document (1). It may be true that the applications envisaged by the Patentee require an overall lower viscosity of the compositions than in the prior art, but this does not reflect in the formulation of Claim 1 which is drafted as a product claim for a composition whose only requirement is to be liquid.

- 2.5 The low amounts of catalyst components (C) and (D) according to Claim 1 of the disputed patent cannot be regarded as a selection within the broader ranges disclosed in document (1).

In a similar case (T 198/84, OJ 7/1985, 209) where the sole difference between a prior document and the subject-matter of a disputed patent consisted in the use of different amounts of catalyst, the Board has laid down

the conditions where novelty of a specifically selected range can be acknowledged. According to point 5 of that decision, a sub-range selected from a fairly broad range of numbers can be patentable only if the selected sub-range is narrow and sufficiently far removed from the known range illustrated by means of examples.

This approach was confirmed in the decision T 17/85, OJ 12/1986, 406 wherein it is specified (points 7.4 and 7.5) that if a preferred numerical range in a citation in part anticipates a range claimed in an application, the said claimed range cannot be regarded as novel at least in cases where the values in the examples given in the citation lie just outside the claimed range and teach the skilled person that it is possible to use the whole of this range.

The resulting of asking the question whether these criteria are fulfilled in the present case is that, in view of the fact that an already narrow preferred range of 0.5 to 5% by weight is known, it is impossible to speak of the singling out of a narrow range. On the contrary, this known range is to be regarded as disclosing all the values lying between its upper and lower limits. Besides, the ranges of 0.25 to 0.75% by weight for (C) and 0.3 to 1% by weight for (D) according to Claim 1 are not sufficiently far removed from the exemplified ranges. As already mentioned in point 2.1.3 above, the amount of 0.25% by weight for (C) according to Example 13 and the amount of 0.2% by weight for (D) according to Examples 7 to 12 as well as the amounts of 2.5% and 0.25% by weight for (C) and (D) respectively according to Example 24A are all values which are within or just outside the claimed ranges. Moreover, these

Examples would not be regarded by the skilled person as isolated embodiments, but as representing the elaboration of a broader range.

This means that the ranges mentioned in Claim 1 for components (C) and (D) are fully anticipated by the general teaching of document (1).

3. For both substantive and formal reasons the auxiliary request cannot be allowed.

3.1 Alternative Claim 1 for which the two-part form has been used, is just a redrafting of Claim 1 of the main request without modification of the subject-matter. The fact that some features, namely the fluid state, the proportion of aliphatic units in  $R_1$  and the amounts of the components (B), (C) and (D), have been shifted into the characterising part of the claim, does not change the essence of the invention at all since both compositions are characterised by the same combination of features. The objections raised against Claim 1 of the main request apply thus against Claim 1 of the auxiliary request as well.

3.2 From a more formal standpoint the two-part form would suggest that the preamble takes full account of the prior art teaching, presumably of document (1), and that the characterising part is limited to the features assumed to confer novelty. This does not seem to be the case, since component (B) according to Example 24A is present in an amount of 82% by weight of (A) and the latter is based on HDI; this means that these two features should have been mentioned in the preamble.

The wording of alternative Claim 1 is defective in further respects. It should have been specified that the urethane prepolymer is the reaction product of an organic diisocyanate and a diol having the structure HO-R<sub>2</sub>-OH; moreover, the presence of a methyl group in the liquid unsaturated monomer is inconsistent with the double bond.

- 3.3 Claim 11 of the main request concerns a method (or process) for the preparation of a liquid dental composition. As specified in Article 64(2) EPC, if the subject-matter of a European patent is a process, the protection conferred by the patent shall extend to the products directly obtained by such process. This means that the protection conferred by the claims of the main request extends to the preparation of a liquid dental composition and to this composition itself only.

By contrast, alternative Claim 11 is directed to the use of this liquid composition as a fissure sealant. The change of claim category results thus in a totally different protection which offends against Article 123(3) EPC.

4. There is no doubt that the lack of novelty objection against Claim 1 of either request could have been easily overcome by an appropriate wording, for instance by using "consists of" instead of "comprises" and thereby restricting the claimed compositions to mixtures of the four ingredients (A) to (D).

However, since the Respondent did not take part in the oral proceedings, it seems appropriate to specify that even the subject-matter of Claim 1 limited in this way would not have met all the criteria of patentability, i.e. the requirement of inventive step.

- 4.1 Various considerations would lead the skilled man faced with the problem of adapting a composition disclosed in document (1) to the specific use as fissure sealant, to the choice of the basic compositions disclosed in example 24A of document (1).

Whereas MDI prepolymers are solid, HDI prepolymer is viscous and the mixture of the four ingredients (A) to (D), thus prior to addition of filler, according to this example has basically the consistency of a solution of this viscous prepolymer in the unsaturated compound (B) (page 41, paragraph 3). This is a clear indication that compositions consisting of the four ingredients (A) to (D) wherein (A) is based on HDI would be suitable for applications requiring a lower viscosity, thus for dental fissure sealants.

The comparison of mechanical properties and depth of cure after one minute for compositions based on aliphatic (Example 24A), cycloaliphatic (Example 25) and aromatic (Examples 24B and 26) urethane prepolymers, shows that HDI prepolymers lead to the highest compressive strength and tensile strength and MDI prepolymers to the lowest depth of cure.

Similarly, Examples 15 to 22 provide a comparison of the influence of 8 different components (B) on the compressive strength and hardness of the compositions after curing. The table on page 38 demonstrates unambiguously that the best results for both properties are achieved with ethylene glycol dimethacrylate, all other features being the same.

This means that the simple knowledge of the properties usually required for fissure sealant compositions in terms of viscosity, compressive strength, tensile strength, depth of cure and hardness was a direct incentive to combine a prepolymer derived from hexamethylene diisocyanate and ethylene glycol dimethacrylate as basic components (A) and (B) of the composition.

- 4.2 Similar compositions comprising an aliphatic diisocyanate diacrylate, an unsaturated compound and a polymerisation catalyst are known from document (2) to be suitable both as dental filling compositions and as fissure sealants (page 1, lines 24 to 30; page 3, lines 14 to 16 and lines 21 to 23). This teaching would be a further incentive for the skilled man faced with the above problem to select an aliphatic urethane prepolymer among all the urethane prepolymers exemplified in document (1).

It is significant that the compositions according to document (2) are, like the compositions presently claimed, not defined in a limitative way by using the expression "consisting of", but only by the word "comprising" (Claim 1). The large range of applications envisaged for these compositions (page 3, lines 21 to 28) requires obviously the possibility to adjust the properties thereof according to the specific use which can only be done by addition of ingredients well known in the art. This, incidentally, confirms that the non-inclusion of fillers in Claim 1 of the disputed patent cannot be regarded as a distinguishing feature.

4.3 For the solution of the problem, there are first obvious reasons to keep the amounts of amine (C) and  $\alpha$ -diketone (D) as low as possible since the former is toxicologically objectionable and the latter tends to cause coloration problems. Besides, a thin dental fissure sealant is self-evidently easier to cure than a thick heavily filled dental filling composition, so that lesser amounts of catalyst components offer themselves for the solution of the problem. The exact determination thereof is a mere matter of optimisation which does not embody any inventive merit.

As to the air-inhibition effect, it is not specifically limited to thin layers, but affects any surface where oxygen and a composition to be cured are in contact. In this regard, there is thus no basic difference between the superficial layer of a fissure sealant and that of a heavily filled composition; in both cases there is a monomolecular layer of not completely polymerised unsaturated components which has to be removed by the practitioner. This effect cannot, therefore, contribute to the acknowledgement of an inventive step.

4.4 The subject-matter of the disputed patent cannot be regarded as an "improvement" of the teaching of document (1). The fact that document (2) discloses only the basic ingredients of a composition suitable, among other applications, as dental fissure sealant as well as dental filling composition, without even indicating the least additive or suggesting the least modification to this basic composition, is evidence that the requirements for this composition according to the envisaged application are known to the skilled man and that he does not need further information in order to adjust the viscosity or optimise the curing conditions. Much more than an

"improvement" of dental filling compositions, dental fissure sealants should be considered together with the latter as two different applications of the same general concept wherein urethane prepolymers based on HDI have proved to be most appropriate.

5. These arguments regarding inventive step apply equally to the other composition Claims 2 to 9 which merely represent preferred embodiments of the compositions according to Claim 1 as well as to Claims 10 and 11, since neither a package comprising this composition, nor the simple mixing of the four ingredients in order to prepare the composition represents inventive features.

#### Order

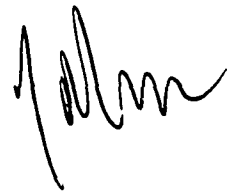
For the above reasons, it is decided that:

1. The impugned decision is set aside.
2. The patent is revoked.

The Registrar:



The Chairman:



CG 16.10.87  
E 19.10.87