

Publication in the Official Journal ~~Yes~~ / No

File Number: T 707/89 - 3.3.1
Application No.: 85 304 352.9
Publication No.: 0 166 566
Title of invention: Resin colorants and resin coloration

Classification: C09B 29/033

D E C I S I O N
of 15 April 1991

Applicant: Milliken Research Corporation

Headword: Colorants/Milliken

EPC Article 84

Keyword: "Clarity of claim (yes)"

Headnote



Case Number : T 707/89 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 15 April 1991

Appellant : Milliken Research Corporation
Iron Ore Road
Spartenburg
South Carolina 29304 (US)

Representative : Perry, Robert Edward et al.
Gill Jennings & Every
53-64 Chancery Lane
London WC2A 1HN (GB)

Decision under appeal : Decision of Examining Division 021 of the
European Patent Office dated 29 May 1989
refusing European patent application
No. 85 304 352.9 pursuant to Article 97(1) EPC.

Composition of the Board :

Chairman : R.W. Andrews
Members : P.K.H. Krasa
F. Benussi

Summary of Facts and Submissions

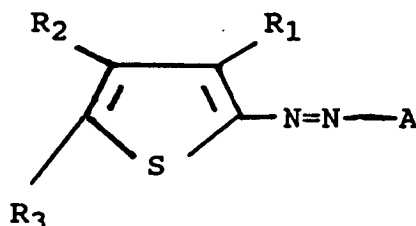
- I. European patent application No. 85 304 352.9, which was filed on 18 June 1985, was refused by a decision of the Examining Division 021 of the European Patent Office dated 29 May 1989.
- II. The ground for the refusal was that the definition of the symbol A in Claim 1 filed on 24 June 1988 as the radical of a dyestuff coupler which is effectively resistant to stannous octanoate and flame retardant compounds and which has functionality by virtue of one or more reactive substituents lacked clarity and placed too great a burden on the skilled person to decide, without undue investigation, which couplers fulfil these requirements.
- III. An appeal was lodged against this decision on 24 July 1989 and the prescribed fee duly paid. In his statement of grounds of appeal, filed on 28 September 1989 and during the oral proceedings held on 15 April 1991, the Appellant argued that each of the components and steps of the process of Claim 1 in accordance with the main and first auxiliary requests would be understood by the skilled person and, therefore, the requirement of Article 84 EPC with respect to clarity is met.

The Appellant also contended that there is no justification for the supposition that, where a chemical formula is known and the utility of that compound is expressed in a process claim, the process must inevitably be linked to the structurally-defined compounds. In the Appellant's view, the broad scope of the invention relates, among other factors, to components which have clearly defined parameters which have not been chosen to disguise lack of novelty.

IV. The Appellant requested that the decision under appeal be set aside and a patent granted on the basis of the main request or two auxiliary requests submitted during oral proceedings.

Claim 1 for all designated states, in accordance with the main request, reads as follows:

"A process for preparing a coloured polyurethane resin, which comprises subjecting a mixture of an isocyanate and a polyol to a polyurethane-forming polyaddition reaction and, before or during the reaction, adding to the mixture a reactive colouring agent which is effectively resistant to stannous octanoate and flame retardant compounds and which is of the formula



wherein either R_1 , R_2 and R_3 are independently selected from halogen, carboxyl, alkanoyl, aroyl, alkyl, aryl, cyano, alkylsulfonyl, arylsulfonyl, alkylthio, arylthio, alkylsulfinyl, arylsulfinyl, alkyledithio, aryldithio, thiocyno, alkylaminocarbonyl, dialkylaminocarbonyl, alkoxy, aryloxy, hydrogen, alkylaminosulfonyl, arylaminosulfonyl, dialkylaminosulfonyl, diarylamino sulfonyl, alkylaminosulfinyl, dialkylaminosulfinyl, arylaminosulfinyl, diarylamino sulfinyl, alkylaminothio, dialkylaminothio,

arylaminothio and diarylaminothio, or one or R_1 , R_2 and R_3 is as defined above and the other two are a divalent polymethylene radical, thus forming a carbocyclic ring with the carbon atoms to which they are bound; and

A is the radical of a dyestuff coupler (which) has functionality by virtue of one or more reactive substituents".

Claim 1 for all designated states in accordance with the first auxiliary request is identical to the above claim except that the symbol A is defined as the radical of an aromatic amine dyestuff coupler which has functionality by virtue of one or more reactive substituents. Claims 2 to 7 for all designated States except for Austria of both the main and first auxiliary requests claim novel compounds of the above formula in which the symbol A represents a substituted 4-aminophenyl radical.

Claim 1 for all designated states except for Austria of the second auxiliary request relates to the above-mentioned novel compounds. Claims 1, 7, and 8 for Austria and Claims 7, 8 and 9 for the other designated states of this request relate to a process for preparing a coloured polyurethane resin using as a reactive colouring agent one of the novel compounds or a compound in which the symbol A represents a substituted tetrahydroquinolinyl or benzomopholinyl radical.

- V. At the conclusion of the oral proceedings the Board's decision to order the grant of a patent in accordance with the Appellant's main request was announced.

Reasons for the Decision

1. The appeal is admissible.
2. There are no formal objections to any of the sets of claims since they are adequately supported by the original disclosure. In view of the Board's decision, only the claims in accordance with the Appellant's main request will be considered in detail.

Claim 1 for all designated states of this request differ from Claim 1 as originally filed in the following respects:

- (a) The manner by which the reactive colouring agent is covalently incorporated into the polyurethane resin is specified.
- (b) The expressions "carboxylic acid" and "carboxylic ring" have been amended to read "carboxyl" and "carbocyclic ring" respectively.
- (c) The terms "alkylcarbonyl" and "arylcabonyl", which are redundant in view of the earlier references to "alkanoyl" and "aroyl", have been deleted.
- (d) The expression "which is effectively resistant to stannous octanoate and flame retardant compounds" has been deleted from the definition of the symbol A and now qualifies the reactive colouring agent itself.

- 2.1 A basis for the amendment mentioned under (a) above is to be found on page 13, lines 12 to 20 of the originally filed application.

Amendments referred to in (b) and (c) above represent the correction of obvious errors.

In the Board's judgement, the amendment specified under (d) above is necessary since it is the reactive colouring agent itself which must be stable towards stannous octanoate and flame retardant compounds. This is clear from the fact that the tests used to determine these properties are carried out on the polyurethane resin coloured by the reactive colouring agent (cf. Example 9 and page 23, lines 4 to 17). Moreover, a comparison of Tables II and III of the application clearly demonstrate that resistance to stannous octanoate is only achieved if the 4-aminophenyl coupler is linked to a substituted thienyl radical, since if such couplers are joined to a substituted benzothiazolyl radical the resulting reactive colouring agents are not effectively resistant to stannous octanoate.

- 2.2 The addition of alkoxycarbonyl to the definition of the symbols R_1 , R_2 and R_3 and halogen to that of the symbols R_4 , R_5 , R_6 and R_7 in Claim 2 (both sets of claims) is justified by original Claims 4 and 5 respectively. In view of Examples 2, 4, 11 to 16, 20 to 31, 43 to 51 and 53, the reference to carboxyalkyl in Claim 4 was clearly an error in nomenclature.
3. In view of the disclosure in the application (see, in particular, page 22, line 20 to page 33, line 11 and Example 9), there is doubt that the skilled person would, without any difficulty, be able to determine whether a reactive colouring agent was resistant to stannous octanoate and flame retardant compounds.
- 3.1 Thus, the only question to be decided in this appeal is whether the definition of the symbol A in Claim 1 of both sets of claims as the radical of a dyestuff coupler which

has functionality of virtue of one or more reactive substituents is sufficiently clear to satisfy the requirements of Article 84 EPC.

In considering this question it should be borne in mind that the addressee of a patent application is a skilled person in the particular art, who is naturally aware of the relevant prior art. In the light of this knowledge, particularly of US-A-4 284 729 (equivalent to GB-2 074 177 referred to in the application), the skilled person would realise that the invention is based on the discovery that reactive colouring agents having the desired stability for preparing coloured polyurethane resins are obtained if a dyestuff coupler is coupled to a thienyl radical substituted in the specified manner instead of to, for example, a benzothiazolyl radical as taught in the above-mentioned patent specification.

Furthermore, the use of reactive colouring agents for the preparation of coloured polyurethane resins is well-known in the art. Thus, the skilled person is aware that the successful incorporation of the colouring agent involves the formation of covalent bonds and, therefore, that the dyestuff coupler must possess suitable reactive substituents to enable these covalent bonds to be formed. Thus, in the light of his expert knowledge in this area of technology and of the numerous Examples in the application in suit, the definition of the symbol A would be understood by the skilled person.

- 3.2 It is the established jurisprudence of this Board that it is permissible to define technical features in a claim in functional terms if, from an objective viewpoint, such features cannot otherwise be defined more precisely without unduly restricting the scope of the invention, and if these features provide instructions which are sufficiently clear to the skilled person to reduce them to

practice without undue burden, if necessary with a reasonable number of experiments (cf. Decision T 68/85, OJ EPO 1987, 228, particularly points 8.4.2 and 8.4.3).

In the present case, the Board is satisfied that the requirements laid down in this decision are met. Thus, the disclosure of the tests for determining the resistance to stannous octanoate and flame retardant compounds is clear and the effort called for on the part of the skilled person in this respect must be considered reasonable. Having regard to the technical teaching of the disputed application, it would be clearly unjustified to limit the scope of protection to the use of reactive colouring agents defined in terms of their chemical formulae.

- 3.3 Therefore, in the Board's judgement, Claim 1 of both sets of claims in accordance with the main request satisfies the requirements of Article 84 EPC.
4. In a communication dated 4 March 1988, the Examining Division expressed the opinion that the subject-matter of the originally filed claims was novel and inventive. After examination of the cited prior art, the Board also considers that the subject-matter of the claims in accordance with the main request is novel and involves an inventive step.
5. In view of the above finding, it is not necessary to consider the Appellant's auxiliary requests.

Order

For these reasons, it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to grant a patent on the basis of the main request submitted during oral proceedings and a description to be brought into agreement with the claims.

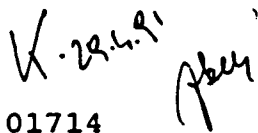
The Registrar:


E. Görgmaier

The Chairman:



R.W. Andrews


01714