

A		B		C	X
---	--	---	--	---	---

File No.: T 0729/90 - 3.3.3
Application No.: 85 303 954.3
Publication No.: 0 165 005
Classification: C08K 5/39
Title of invention: Stabilising polymers and polymer films

D E C I S I O N
of 29 October 1993

Applicant: Robinson Brothers Ltd.
Proprietor of the patent: -
Opponent: -

Headword:

EPC: Art. 56, 108

Keyword: "Admissibility: minimum requirement met; Inventive step: no hint of suitability for use in an agricultural/horticultural context".

Headnote
Catchwords



Case Number: T 0729/90 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 29 October 1993

Appellant: Robinson Brothers Ltd.
Phoenix Street
West Bromwich
West Midlands, B70 0AH (GB)

Representative: Perry, Robert Edward
Gill Jennings & Every,
Broadgate House
7 Eldon Street
London EC2M 7LH (GB)

Decision under appeal: Decision of the Examining Division of the European
Patent Office dated 6 June 1990 refusing European
patent application No. 85 303 954.3 pursuant to
Article 97(1) EPC.

Composition of the Board:

Chairman: F. Antony
Members: R. Young
G. Davies

Summary of Facts and Submissions

- I. European patent application No. 85 303 954.3, filed on 4 June 1985 and published under No. 0 165 005, was refused by a decision of the Examining Division dated 6 June 1990. The ground of refusal was lack of inventive step in the light of the disclosure of US-A-3 318 841.
- II. There is some confusion in the decision under appeal as to the set of claims on which it is based. Thus paragraph I.6 states that the basis for the decision was "the Claim 1 filed with letter dated 19.11.86 and the dependent Claims 2 and 3 filed on the same date as well as the dependent Claims 4-10 filed with letter dated 20.3.89". Paragraph II.1 of the same decision however refers to "Claim 1 as filed with letter dated 10.11.86 ... dependent Claims 2 and 3 filed on the same date as well as Claims 4-11 filed on 23.3.89".

It is, however, evident from the file that the decision under appeal was *de facto* based on a set of eleven claims which had been filed on 23 March 1989, of which the only independent claim, Claim 1, reads as follows:

"A method for protecting flora at an agricultural or horticultural locus, which comprises using a film or sheet of a composition comprising a polymer and a nickel dialkyldithiocarbamate of the formula $(R^1R^2NCSS)_2Ni$, wherein R^1 and R^2 are the same or different branched-chain C_{5-18} alkyl groups."

- III. According to the decision, in which novelty was recognised, US-A-3 318 841, which was to be regarded as the closest state of the art, described light stable compositions of polypropylene containing, according to

Example 14, nickel di(2-ethyl-hexyl)-dithiocarbamate, which, being a C₈-branched substituent, represented an optimum. Although none of the cited prior art gave an indication regarding the action of pesticides, it would nevertheless have been obvious for the skilled person, faced with the problem of providing polymer films which degraded minimally when exposed to natural weathering conditions encountered in an agricultural or horticultural field, to have selected a material which was properly stabilised against the damaging effect of UV-radiation. The additional advantage of resistance to pesticides took place without any modification, and had to be regarded as an additional benefit not capable of supporting an inventive step.

The argument that the solution to the problem had already been indicated in the specification could not be accepted, because the comparisons given were unrelated to the closest state of the art and therefore subjective. It was thus not possible to determine which effect had been achieved with regard to the nearest art, nor, consequently, the objective technical problem arising from it.

- IV. On 12 July 1990, a Notice of Appeal against the above decision was filed in a letter headed "Notice and Grounds of Appeal", in which it was stated as the grounds of the appeal that the invention related to novel subject matter, and to a satisfactory solution to the previously unappreciated problem of resistance to the action of pesticides. The fact that an adequate solution had been provided was evident from the specification on file. The prescribed fee was paid on 26 July 1990.
- V. In response to a Communication issued by the Board on 24 September 1990, which put the admissibility of the

appeal in question, the Appellant submitted, in a letter filed on 31 January 1991, that the grounds for appeal had been adequately stated, and even if they had not, the set of claims constituting the Auxiliary Request were by way of being an interlocutory revision for which, strictly, no grounds of appeal were necessary.

- VI. It was requested that the decision to refuse the application be set aside, and a patent be granted, as a Main Request, on the basis of the set of 11 claims filed with the letter of 23 March 1989, i.e. as refused by the Examining Division, or, as an Auxiliary Request, on the basis of a set of nine claims which had been filed together with the Notice. Oral proceedings were requested in the event of rejection of the Main Request.

Reasons for the Decision

1. *Admissibility of the Appeal*

The first question to be decided is whether the written statement filed on 12 July 1990 and headed "Notice and Grounds of Appeal" meets the requirements of Article 108 EPC.

- 1.1 According to the decision J 22/86 (OJ EPO 1987, 280) "The requirement of Article 108 EPC is for a statement which sets out the substance of the Appellant's case; that is, the reasons why the appeal should be allowed and the decision under appeal should be set aside." Furthermore, "in general, it is obvious that the less reasoning that a Statement contains, the greater will be the risk that the appeal will be rejected as inadmissible for non-compliance with Article 108 EPC." (cf. Reasons for the decision; para. 2).

This principle was applied in the decision T 145/88 of 27 October 1989 (OJ EPO 1991, 251). In that case, where the appeal was rejected as inadmissible, it was noted that the document headed "Grounds of Appeal" gave no reasons whatsoever why the Division was wrong to hold that certain claims were invalid (cf. Reasons for the decision, para. 4).

- 1.2 In the present case, the only reasoning is that reproduced in section IV. above. Even if the brief reference to the adequate solution of a previously unappreciated problem could be considered as indicating why the subject matter of the application in suit should be regarded as patentable, there is no statement at all as to why the decision under appeal should be set aside. In particular, there is no basis for concluding that the phrase "the previously-unappreciated problem" was intended to refer to a deficiency of discernment on the part of the Examining Division, as was later canvassed by the Appellant in a submission filed after the end of the period allowed for appeal (cf. letter filed on 31 January 1991).

Thus the reasoning of the Statement is insufficient to meet the requirements of Article 108 EPC.

- 1.3 It is therefore necessary to consider whether the fact alone that the Statement filed on 12 July 1990 contained a set of claims forming an Auxiliary Request renders the appeal admissible. According to the Statement, Claim 1 of the set of claims filed as Auxiliary Request corresponded to Claim 4 of the Main Request, and thus to subject matter which had not been the subject of rejection (see second para.).

1.3.1 It is evident from the decision under appeal that the objection of lack of inventive step did not apply to dependent Claim 4 of the Main Request. Indeed it is clear from the decision that subject matter based on this Claim had already been suggested by the Examining Division as involving an inventive step in a Communication dated 19 February 1988 (cf. Reasons for the decision, para. 3.4).

Thus Claim 1 of the set of claims forming the Auxiliary Request referred to in the Statement was evidently an attempt to remove the factual basis for the rejection, by following the proposal made in the previous Communication of the Examining Division.

1.3.2 According to the decision J 2/87 of 20 July 1987 (OJ EPO 1988, 330), which also followed the principles laid down in J 22/86 referred to above, the minimum requirements of Article 108 EPC are satisfied when the Notice of Appeal can be interpreted as containing a request for rectification of the decision concerned on the grounds that due to the fact that the conditions set forth in a former Communication of the EPO were now fulfilled, the decision was no longer justified.

These conditions are considered to be met by the Auxiliary Request in the present case, because the scope in which the main claim of the said Request is drafted corresponds to that previously indicated as overcoming the objection of lack of inventive step by the Examining Division.

On this basis, therefore, the Appeal is admissible.

2. *Allowability of the Amendments*

Claim 1 of the Main Request is based on a combination of Claims 1, 13 and 14 of the application as filed. Claim 4 is supported by Claim 4 in combination with Claim 5 of the application as filed. Claims 2 and 3 and Claims 6 to 11 are supported by original Claims 2, 3 and 7 to 12 respectively.

Thus the requirements of Article 123(2) EPC are met.

3. *The Technical Problem*

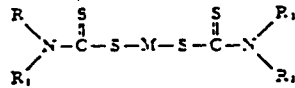
The application in suit relates to stabilising polymers, e.g. clear polyethylene film (or sheet) for outdoor use (cf. page 1, lines 1 to 2).

According to the application in suit many systems using *inter alia* ultraviolet stabilisers had been proposed for stabilising polyolefines against weathering. It had not, however, been recognised that agricultural and horticultural film was additionally exposed to pesticidal chemicals in a manner that adversely affected its weathering resistance (page 1, lines 16 to 17; page 2, lines 1 to 5).

3.1 Document US-A-3 318 841 (D1) was given in the decision under appeal as the nearest available state of the art. The Board is prepared to consider the matter from this point of view.

According to D1 there is described a light-stable composition comprising solid, isotactic, substantially crystalline polypropylene and a stabilizing quantity,

e.g. from about 0.05% to about 5% by weight of the composition, of a dithiocarbamate having the general formula:



wherein each of R, R₁, R₂ and R₃ is a hydrocarbon radical containing 1 to about 18 carbon atoms and M is selected from the group consisting of nickel and cobalt (see Claims 1 and 2 read in conjunction with column 2, lines 26 to 34).

According to Example 14, polypropylene monofilaments having a denier of about 125 to 150 and containing 0.2 wt% nickel di-(2-ethyl-hexyl)-dithiocarbamate were exposed under tension to the light produced by a carbon arc in an Atlas Fade-ometer. Whereas the stabilized filaments retained tenacity for 260 hours, control filaments (no dithiocarbamate added) broke after 20-40 hours (col. 3, lines 18 to 56; col. 4, lines 38 to 68).

The stabilising material is thus effective to prevent degradation of the polymer caused by exposure to light, particularly the high ultraviolet and low visible portions of the spectrum (cf. col. 2, lines 16 to 21; col. 3, line 22).

3.2 Compared with this state of the art, the technical problem underlying the application in suit could be seen as being to find for the polymer additives used in D1 a further field of use in addition to the one specified therein.

3.2.1 This problem was solved, according to Claim 1 of the application in suit by the proposed use of a polymer film or sheet comprising a nickel dithiocarbamate having the same or different branched-chain C₅₋₁₈ alkyl

groups R, R₁, R₂, R₃ for protecting flora at an agricultural or horticultural locus where it is exposed, not only to weathering conditions including UV radiation, but also to contact with chemicals occurring in pesticidal sprays and the like.

3.2.2 From the results given in the Examples of the application in suit, it is clear that the specified dithiocarbamate additives provide protection against degradation of the polymer not only when exposed to UV-radiation under simple laboratory conditions, but also in connection with the aforementioned use. This can be seen especially from the results of Example 2 (Table 3), which show that after exposure to a 4% aqueous suspension of cypermethrin (a pesticide), the UV-radiation irradiation times needed to reach a carbonyl index of 20 (corresponding to a 50% reduction in the tensile strength of the polymer) were actually increased for a sheet containing the dithiocarbamate stabiliser, compared with a sheet containing the same stabiliser but which had not been exposed to the chemical.

3.3 The point made in the decision under appeal that the additional advantage of resistance to pesticides takes place without any modification and is not capable of supporting an inventive step (cf. para. 3.2, second to last sentence of the Reasons for the Decision) cannot be accepted.

3.3.1 As to the reference to the effect taking place "without modification", this is inaccurate. The effect arises from the conditions of use, which are modified to include the additional stresses of exposure to agricultural/horticultural related chemicals.

3.3.2 Concerning the additional advantage itself, as this Board has already stated in unpublished decision T 227/89 of 25 September 1991, "... In determining which effect is crucial and which is merely accidental (so-called "bonus effect"), a realistic approach has to be taken, considering the relative technical and practical importance of those effects in the circumstances of a given case" (see para. 3.3 of the Reasons for the Decision).

3.3.3 In the application in suit it is stated that prior systems which have been proposed for stabilising polyolefines against weathering, although performing well in laboratory tests and in simple outdoor conditions, surprisingly do not perform as well as expected when used under conditions prevailing in agriculture and horticulture (see page 1, line 32 to page 2, line 5).

3.3.4 No reason has been put forward in the decision under appeal for doubting either the existence of the stated disadvantage or its practical significance in terms of shortness of service life for the polymer film or sheet if it were used at an agricultural/horticultural locus. Indeed the comparative tests in the Examples of the application in suit show quantitatively the reduced effectiveness of some conventional UV-stabilisers under conditions of exposure to certain agriculture-related chemicals (cf. Table 2; DTPS; TBNi).

The effect of overcoming this disadvantage is therefore both significant and measurable.

There is consequently no justification for failing to take it into account in the formulation of the technical problem.

3.4 As to the question of the comparison with the closest state of the art, it is true that D1 presents tests carried out using nickel di-(2-ethyl-hexyl)-dithiocarbamate as a light stabilising additive instead of nickel di-isononyl dithiocarbamate; on monofilaments rather than sheets, and in an Atlas Fade-ometer rather than in the more generally defined "UV cabinet" as in the application in suit.

3.4.1 In the present case, however, this cannot detract from the validity of the tests made. The comparison given in the application in suit is a direct one using identical additive compounds and concentrations, form of sample tested (sheets), polymers and irradiation procedures, with only the conditions of use being changed between illustrative example and the control (see Example 2, Table 3).

Since, furthermore, the compound selected for testing in the application in suit falls within the terms of the disclosure of D1, and indeed differs from that of Example 14 of D1 by only one carbon atom in the alkyl group, the conditions of UV-irradiation in any case being generally analogous to those of D1, the comparison given is still qualitatively a reflection of the closest state of the art.

The tests presented in the application in suit are thus considered by the Board to represent a fair comparison.

3.4.2 Consequently, the maintenance of the carbonyl index values of the UV-irradiated polymer sheets after exposure to pesticide, compared with those of similar sheets without such exposure, is a valid indication of

the extent of the effect corresponding to the solution of the technical problem (cf. application in suit, page 8, Table 3, middle and right columns).

Furthermore, the criticism in the decision under appeal, that the control examples lacked the additive which was responsible for the stabilising effect on the polymeric film (see Reasons for the Decision, para. 3.3) is inapplicable.

In the light of the above, it is credible to the Board that the claimed measures are effective to solve the technical problem.

4. *Novelty*

As correctly stated in the decision under appeal, none of the citations describes a method for protecting flora at an agricultural or horticultural locus.

The subject matter claimed in the application in suit is therefore novel.

5. *Inventive step*

To establish whether the claimed solution involves an inventive step, it is necessary to consider whether the skilled person in possession of D1 would have realised that any of the compounds it disclosed as light-stabilising additives would additionally confer protection against degradation by agriculture-related chemicals, e.g. pesticides, so that the composition could, with particular advantage, be used in film or sheet form at an agricultural or horticultural locus to protect plants.

5.1 Document D1 itself makes no mention of an agricultural/horticultural application, nor to exposure of the compositions to chemicals which might be encountered at such a location, nor even to films or sheets. Indeed, the compositions tested in the Examples were in the form of fine monofilaments which certainly does not imply use under severe outdoor conditions, much less an agricultural/horticultural use.

There is thus no hint to the solution of the technical problem in D1 itself.

5.2 The argument in the decision under appeal that it would have been obvious to select a material which was properly stabilized against the damaging effect of UV radiation (cf. Reasons for the Decision, para. 3.2) does not address the technical problem. In particular it does not enable particular UV stabilisers capable of solving the technical problem to be identified from amongst those disclosed in D1.

5.3 No direct connection has been shown, or even asserted in the decision under appeal, to exist between level of effectiveness of protection against UV irradiation "alone" on the one hand, and against additional hazards such as agriculture-related chemicals on the other.

On the contrary, as can be seen from the comparisons given in the application in suit itself, there are certain widely used, and, under simple outdoor conditions, highly effective UV-stabilisers which evidently do not retain their stabilising capabilities when exposed to particular agricultural/horticultural chemicals (cf. Table 2, DTPS and TBNi).

Thus the skilled person would have had no reason for supposing that the technical problem could be solved by selecting, as an additive for the field of use envisaged here, one which outperformed others only under the test conditions disclosed in D1.

5.4 Leaving the above argument and therefore considerations relating specifically to the technical problem aside for a moment, and assuming that the skilled person, even without having been aware of the technical problem, would nevertheless in any case have selected the most effective light stabilising additive disclosed in D1, it is doubtful whether this would necessarily have been the specific nickel dithiocarbamate of Example 14, identified as "optimum" in the decision under appeal. It can be seen from the claims and description of this document, that the cobalt salts, and especially the cobalt lower alkyl dithiocarbamates, are equally preferred (cf. Claims 1, 4 to 7; col. 7, lines 17 to 20). Furthermore, the highest number of hours to break of the monofilaments tested in the Fade-ometer, were obtained using a nickel dibutyldithiocarbamate additive (cf. Examples 50, 51; Table VI). The agricultural/horticultural use of such cobalt salts or nickel dibutyldithiocarbamate salts would not, however, lead to something falling within the scope of any claim of the application in suit.

It cannot therefore be said that there is any "one way street" leading inevitably to the use of the nickel di-C₅-C₁₈ branched chain alkyl dithiocarbamate as claimed in Claim 1 of the application.

Consequently, the subject matter claimed in the application in suit does not arise in an obvious way from the disclosure of D1.

6. Since there is no other prior art before the Board relating to the horticultural or agricultural use of plastic films stabilised in one or the other way, there is no alternative but to conclude that the subject matter of Claim 1 of the Main Request involves an inventive step.

This being the case, the remaining Claims 2 to 9, being directly or indirectly dependent on Claim 1, are by the same token also directed to subject matter which is both novel and inventive.

7. In the light of the above, it is not necessary further to consider the claims of the Auxiliary Request or to appoint oral proceedings.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the Examining Division with the order to grant a patent on the basis of Claims 1 to 11 filed on 23 March 1989 and a description yet to be adapted thereto.

The Registrar:

The Chairman:

E. Görgmaier

F. Antony