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Case Number: T 76 / 83

T 224 bis

DECISION

of the Technical Board of Appeal 3.3.1

of 21 March 1985

Appellant: Lintrend DEVELOPMENTS(N.I.) Ltd.
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Belfast
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Decision under appeal: Decision of Examining Division 024 of the European Patent Office dated 14 December 1982 refusing European patent application No 79 901 012.9 pursuant to Article 97(1) EPC

Composition of the Board:

Chairman: K. Jahn

Member: G. Szabo

Member: F. Benussi

Summmary of Facts and Submissions

I. European patent application No. 79 901 012.9 filed under the Patent Cooperation Treaty (PCT) on 9 August 1979 and published on 20 March 1980 with the publication number WO 80/00463, for which the priorities of the prior applications on 15 August and 26 September 1978 (GB-33423/78 and 38156/78) are claimed, was refused by the decision of the Examining Division 024 of the EPO dated 14 December 1982. The decision was based on 15 claims. The main Claim 1, filed on 20 September 1982, had the following wording :

"1. A process for modifying the properties of a fibrous product comprising linen or ramie fibres, by contacting the product with strong alkali while the product is substantially free of resin or textile cross-linking agent under conditions such that the fibres can shrink by at least 10% in length and such that the product shrinks by at least 10%, and then cross-linking the product, characterised in that the product resulting from the contact with alkali is rinsed and is then reacted with a cellulose cross-linking agent in the presence of an acidic catalyst while the fibres are substantially in the said shrunk configuration, thereby fixing the fibres substantially in the said shrunk configuration."

II. The reason given for the refusal was that the subject-matter of the main claim did not involve an inventive step. It was known from document (A), i.e. US-A-3 542 503, that the properties of fibrous cellulosic products could be modified by a process which used strong alkali while the product was substantially free

from resin or textile cross-linking agents. The products included linen and ramie (col. 1, line 39). Although document (A) did not indicate the percentage of shrinkage, it was apparent that a shrinkage of more than 10% was achieved by virtue of the process conditions. Moreover, the product was thereafter rinsed and then reacted with a cellulose cross-linking agent whilst substantially in the shrunk configuration (cf. column 4, lines 52 to 55). The only difference between Claim 1 of the application under consideration and the process of document (A) was that an acid catalyst was used at cross-linking in the former process. It was, however, known from document (B), i.e. Mark, H. et. al. "Chemical Aftertreatment of Textiles", 1971, John Wiley and Sons, page 340, that such catalysts were generally suitable for such cross-linking processes of cellulosic fibres. The claimed process therefore lacked an inventive step.

III. The Applicant lodged an appeal against the decision of 14 December 1982 on 8 February 1983 paying the fee on 11 February 1983, and submitted a Statement of Grounds on 12 April 1983. In reply to objections raised by the Board, the Appellant submitted a new set of claims. An oral hearing was appointed and the Appellant amended this set by deleting Claim 16 in a letter dated 12 March 1985 (1st request).

Furthermore, the request to consider these claims was supplemented with auxiliary requests for relief in the same letter, relating to Claims 1 to 13 (2nd request), Claims 1 to 13 wherein Claim 1 was additionally limited to the features of Claim 4 (3rd request), Claims 1 to 13 wherein Claim 1 was additionally limited to the features

of Claim 7 (4th request) and to any one of these requests subject to the further limitation to "linen", respectively. The main claim and the relevant Claims 4, 7, 14 and 15 of the 1st request are as follows :

1. A process for modifying the properties of a fibrous product comprising linen or ramie fibres, by contacting the product with strong alkali while the product is substantially free of resin or textile cross-linking agent under conditions such that the fibres can shrink by at least 10% in length and such that the product shrinks by at least 10%, and then cross-linking the product, characterised in that the contact with alkali is conducted for a time of more than 10 minutes and under conditions such that the resulting fibres appear substantially free of nodes when mounted in oil and observed at 125 magnification, and the product resulting from the contact with alkali is rinsed and is then reacted with a cellulose cross-linking agent in the presence of an acidic catalyst while the fibres are substantially in the said shrunk configuration, thereby fixing the fibres substantially in the said shrunk configuration.

4. A process according to any preceding claim characterised in that the catalyst is a non-phase separation catalyst.

7. A process according to any preceding claim characterised in that, after fixing the fibres substantially in their shrunk configuration, the product is mercerised.

14. A fibrous product comprising linen or ramie fibres characterised in that the fibres, when mounted in oil and observed at 125 magnification, appear substantially free of nodes.

15. A product according to Claim 14 characterised in that the fibres have been reacted with a cellulose cross-linking agent.

IV. In his submissions the Appellant presented substantially the following arguments in support of the appeal :

a) The Examining Division wrongly interpreted document (A) as teaching that cotton, linen and ramie are similar in respect of chemical treatment. For linen no such treatment could be envisaged which would have provided wet crease resistance without embrittlement. This was the problem and the cited document gives no guidance as to how to solve it. The cited document only mentions linen and ramie once and exemplifies the process with cotton only. It also refers to rayon although this would be dissolved in alkali. In practice the treatment of linen and ramie with alkali must be conducted for more than 5 minutes, i.e. at least 10 minutes (cf. Claim 1). Otherwise the results are unsatisfactory.

b) As regards cross-linking, the use of an alkaline catalyst in accordance with document (A) gives inferior results. The replacement of this with an acid catalyst was unexpected in the circumstances, since the use of the residual alkali from the previous step was the basic idea of the cited art in order to simplify the process. The requirement in the process

according to the patent in suit, for rinsing the material before further processing, is therefore an essential and important feature. The known method did not aim at the improvement of properties and provided no significant improvement in dry crease resistance. At best it improved wet crease resistance. The use of a non-phase separation catalyst (cf. Claim 4) eliminates the risk with conventional acid catalysts that they would migrate in the surface of the fibres and concentrate at the crown of the yarn, causing thereby a tendency towards embrittlement.

c) As far as the products are concerned (Claims 14 and 15), only soaking the fibre in alkali for more than 10 minutes removes the nodes from the linen. Any treatment for less than 5 minutes only causes insignificant denoding. The product has therefore novel features in comparison with anything obtainable with the process of document (A) which prescribes a treatment for 0.5 to 5 minutes. The result is a material with new physical properties. There is no hint in the cited art how to obtain such results.

V. The Appellant has also stated that he is also appealing against the decision of the first instance on procedural grounds. The alleged procedural violation lies in the unwillingness of the Examining Division to indicate at which level of subsidiary claims patentability could be recognized. It is submitted on behalf of the Appellant that unless there are reasoned objections against each of such claims the assumption must be that the combination of their subject-matter with those under objection should render the matter acceptable to the EPO, as

satisfying the appropriate requirements. The result is that the final refusal was based on grounds on which the Applicant had not previously had a reasoned statement before, and that this must, according to the Appellant, amount to a gross procedural violation.

VI. The Appellant, although duly summoned, elected not to attend the oral hearing, which took place in his absence on 21 March 1985. The Appellant requests that the decision of the first instance be set aside and a European patent granted on the basis of Claims 1 to 15 or of one of the sets of claims specified in the auxiliary requests for relief. The reimbursment of the appeal fee is also requested.

Reasons for the Decision

1. The appeal complies with Articles 106 to 108 and Rule 64 EPC and is, therefore, admissible.

2. There is no formal objection to the current version of the main claim since it is adequately supported by the original disclosure (cf. original Claims 1 to 3, 8, 10 and 21 in conjunction with page 5, line 36 and page 9, lines 29 and 30). Claim 4 is based on page 9, lines 34 and 35, Claim 7 on original Claim 11, and Claims 14 and 15 on original Claims 20 and 21.

3. The relevant state of the art is, as recognized by the Examining Division, still represented by document (A), US-A-3 542 503. This describes the basic treatment of fibrous cellulosic products with strong alkali ("mercerisation") under minimum tension, in particular of cotton and also mentions linen and ramie as suitable for

the purpose (col. 1, line 39). The process is carried out after scouring and bleaching of woven material (cf. Examples 1 to 4), i.e. in the absence of resin and cross-linking agents, in order to allow it to shrink. Subsequently the material is partially rinsed to remove most of the alkali and then cross-linked in the shrunk configuration under minimum tension in the presence of residual alkali as a catalyst. The purpose of the treatments is to obtain cellulosic textile materials with "excellent stretch properties and high level of wet-and-dry wrinkle resistance in a continuous sequence of finishing steps" (col. 2, lines 8 to 13). In addition (col. 2, lines 14 to 18), the process is economised by the elimination of certain steps, e.g. of the total removal of alkali by rinsing before cross-linking.

4. The problem to be solved in view of such state of the art was the attainment of improved properties (cf. page 2, lines 25 to 30 of the application), i.e. better wet crease resistance, expressed otherwise as wrinkle recovery, and also, allegedly, satisfactory handleability in connection with linen and ramie fibres, without significant embrittlement. The solution of the problem modified the known two-stage process of mercerisation and cross-linking by prolonging the time for the first stage to at least 10 minutes, introducing a complete rinsing step between the two stages, and carrying out the cross-linking in the presence of an acid catalyst.

5. The fibrous product comprising linen or ramie fibres appears to be substantially free of nodes at a certain magnification (Claim 14). This is after mercerisation alone, since the further product of cross-linking by any method is only a subsidiary aspect (Claim 15). The

closest state of the art is the inevitable outcome of the specific mercerisation step according to document (A) whenever linen or ramie is used as starting material (col. 1, line 39) for the treatment with strong alkali (col. 2, lines 19 to 28 and 58 to 63). The state of the art suggests a time from 0.5 to 5 minutes for the treatment, against the 10 minutes recommended by the application under appeal. The other conditions for mercerisation are substantially identical (e.g. 10 to 30% sodium hydroxide at 18 to 20°C in (A), col. 3, lines 48 to 61, against the preferred 20 to 30% sodium hydroxide below 30°C in Claim 2 of the present application). The question arises whether or not the outcome of mercerisation is substantially identical in the two documents, i.e. whether the products claimed in the present application are novel.

6. The decision of the Board of Appeal in case T 12/81, ("Diastereomers/BAYER" OJ. 8/1982, 296) established that products of adequately defined specific processes are to be considered as part of the state of the art, even if their structural characteristics are not mentioned in a publication. Indication of a particular starting material and a definite process are sufficient in this respect. The suggestion that linen is a suitable starting material for the mercerisation stated in document (A) and the expressly suggested end-point of a range (5 minutes) to obtain sufficient shrinkage would, in the opinion of the Board, doubtlessly enable the skilled person to follow the instructions and provide the linen resulting after the treatment. Only if such conditions would not necessarily remove substantially all nodes could Claim 14 to a node-free linen be considered as novel in the circumstances.

7. Since the present Applicants repeatedly recommended 5 minutes as adequate treatment time for the mercerisation step (page 5, line 36 and page 6, line 24), the presumption prevails that this is in reality sufficient in the circumstances. It was also apparent that when the main claim was effectively limited to "more than 10 minutes" processing time, the letter accompanying the amendment, dated 8 June 1984, still referred to time "usually more than 5 minutes" (page 3, line 17) which is hardly different from the state of the art. In view of T 12/81, "Diastereomers/BAYER" (Ibid), a mere formal test for novelty, relying on the disclosure of all relevant features of the claim alone, may be inadequate, and must be supplemented with an inquiry as to the real identity of matter at hand whenever appropriate. The onus was therefore on the Appellant to show that the limitation is technically meaningful, i.e. causal to the effect and therefore distinguishing (cf. also T 192/82, "Moulding compositons/BAYER", OJ. 9/1984, 415, Headnote III).

8. The Appellant has not submitted any evidence in the proceedings to refute the presumption that the treatment for 5 minutes according to the state of the art would also remove the nodes from linen and thereby anticipate the claim. In the absence of evidence to the contrary, the subject-matter of Claim 14 therefore lacks novelty, and the same must apply to Claim 15, which relates to the cross-linked further product prepared by any known method, including that of the cited art using an alkali catalysed reaction. Since Claims 1 to 15 were presented together for decision, there is no need to consider the subject-matter of independent Claim 1. No partial decisions are possible and the 1st request must be rejected in its entirety.

9. The subject-matter of the main process Claim 1 of the set of Claims 1 to 13 (2nd request) is distingushed from the specific two-stage processes described in document (A) inasmuch as it relates inter alia to a cross-linking step in the presence of an acid catalyst. Since only alkali catalysed cross-linkings of cellulosic fibres are suggested in document (A), novelty of processes according to Claim 1 and dependent Claims 2 to 13 can be recognized in respect of this citation. The same conclusion applies relative to document (B), cited in prosecution, which discloses the general use of acid catalysts for the purposes of cross-linking, without mentioning, however, mercerised linen or ramie specifically.

10. The question of inventive step with regard to the process claims in question must be considered in the light of the problem to which the invention relates and the results achieved thereby. Since document (A) is also concerned with the problem of achieving wet crease resistance, i.e. wrinkle resistance, any improvement achieved in this respect is relevant and must be considered as the real problem facing the inventor. In view of the general statements in the cited art, a degree of crease resistance must be assumed to be provided with any variant described in or implied by the document. Results with cotton only were tabulated (col. 6) showing improvements with regard of both dry and wet "wrinkle recoveries" with this material. Nevertheless, some yet undisclosed degrees of recovery must also be assumed to be the case for linen and ramie, the other recommended starting materials for the same treatment. The unexpected character of the outcome of the modifications

according to the present application could have been demonstrated by comparative tests against the closest product in the state of the art which is linen treated under the conditions of document (A), but no evidence has been submitted in the proceedings (cf. Statement of Grounds, page 6).

11. Since the possibility of the effective removal of nodes in a 5 minute treatment with alkali cannot be dismissed, the corresponding other consequences of mercerisation must also be presumed to be similar and no better. The use of an acid catalyst in the cross-linking stage, instead of alkali of the cited art, would not necessarily change the character of the product since the catalyst itself contributes nothing to the structure of the product. Again, in the absence of any comparisons virtual identity of results must be assumed with no unexpected effect justifying an inventive step.

12. Document (B) established that the use of acid catalysts was known and preferred for the purpose, and any one of those recommended for cross-linking cellulosic fibres could be considered as obviously suitable in this respect. The statements in the examples in the application that a wet crease recovery angle of about 130° was achieved and that the recovery was "high" cannot in themselves be accepted as surprising in this respect, in view of the general expectation created by document (A). The rinsing step, another allegedly distinguishing feature, is simply predetermined by the subsequent use of an acid catalyst after alkaline conditions were employed in the previous stage. The suggestion that this resulted in a better control of the catalyst quantity is neither unexpected nor necessarily relevant since it is

not known or disclosed by the Appellant to what extent the reaction is dependent on the quantity of the catalyst.

13. The Appellant also emphasized in his submissions that handleability is an important second property which is indicative of good results. Unfortunately, since this attribute is necessarily "rather subjective and there is little point in trying to quantify" the same, the Appellant has taken the attitude that his statements "must be accepted as true" (cf. letter dated 12 March 1985, page 4). The Board has already emphasized in cases T 01/80, ("Carbonless copying paper/BAYER" OJ. 7/1981, 206) and T "20/81, ("Aryloxybenzaldehydes/SHELL", OJ. 6/1982, 217) that "the technical problem must be based on objective criteria" and "advantages, which are relevant to the definiton of the problem and hence to the inventive step, must be supported by sufficient evidence where comparison is made with the pertinent prior art". In absence of actual submissions no surprising consequences of modifications of the known process were demonstrated. It appears that there is no way to establish an improvement in respect of "handleability" in an objective manner at all. In view of the above, the resulting process defined in Claim 1 is obvious to the skilled person. No patentability can therefore be recognized for Claims 1 to 13 (2nd request).

14. The main Claim 1, when limited to the subject-matter of Claim 4 (3rd request for relief), would be restricted to a cross-linking acid catalyst which is of the non-phase separation type. Allegedly, the use of this preferred variant avoids the tendency towards embrittlement (cf. letter dated 8 June 1984; page 2, third full paragraph).

According to the Appellant, conventional acid catalysts have a tendency to migrate towards the surface of the fibres and to concentrate at the crowns of the yarn. A non-phase separation catalyst eliminates this tendency and thereby the tendency towards embrittlement.

Nothing supports this particular effect of non-phase separation catalysts in the disclosure itself, apart from an express statement of preference for such means. Example 3 which alone used a triethylene glycol citric acid polyester falling into the category provides material with "a weft stretch of about 16%" after a second mercerisation which follows cross-linking. Since the provision of wet-and-dry crease resistance without embrittlement was already known to represent somewhat incompatible or contrary requirements (cf. Statement of Grounds, page 5), there is no independent property or part-effect involved. (cf. also T 69/83, "Thermoplastic moulding compositions/BAYER", OJ. 8/1984, p. 357, Head-note II).

15. In such circumstances a comparison with the closest state of the art, i.e. the use of an alkaline catalyst, may have shown a surprising improvement. Alternatively, the discovery of an unexpected problem with ordinary acid catalysts might have been demonstrated in support of the contention that the expected effect had some undesirable deficiency which could then be removed under certain conditions in an unexpected manner. In the absence of demonstrating a distinction in this respect against the state of the art, the choice of the suggested specific non-phase separation catalysts remains obvious on the basis of expectancy of equivalent performance.

No patentable subject-matter can therefore be recognized for Claim 1 incorporating Claim 4 and the 3rd request for relief must also be rejected. Since this request, as well as the ones hereinbefore considered, have also been found unacceptable whenever linen was the treated fibre, a limitation to this particular material, as suggested in the 5th request, cannot impart patentability either.

16. The restriction of Claim 1 with the subject-matter of Claim 7 (4th request for relief) extends the process with a second mercerisation step after the cross-linking stage. The Board has no knowledge from the Search Report or other documents submitted during prosecution about any disclosure of such an additional step in relation to linen and ramie. Some cross-linked fabrics from these materials are alleged in the application to benefit from such further treatment which may improve its extensibility and therefore the resistance to tear and abrasion in particular in a tightly woven state (page 10, second paragraph). This matter raises questions which have not yet been examined. In the absence of a considered view by the Examining Division, the Board cannot in the circumstances refuse the request based on claims which incorporate such subject-matter and makes use of its power under Article 111(1) EPC to remit the case to the Examining Division for further prosecution.

17. As regards the alleged procedural violation by the Examining Division, the history of the prosecution fails to support the detailed contentions in the statement of appeal. The Appellant's assumption (cf. Statement of Grounds page 1, third paragraph) that the absence of specific objections to subsidiary claims renders them

automatically suitable for validating independent claims by incorporation, is wrong and unjustified. As long as the application fails to comply with the requirement of the Convention for reasons of deficiencies in one or more of the claims, the Examining Division may refuse the grant if is sees no progress towards removing the ground of objection (cf. T 84/82, "Chloral derivatives/ MACARTHYS"; OJ. 11/1983, 451-458).

18. Whilst the Examining Division may indicate possible avenues for removing objections, this is discretionary and not an unqualified obligation on its part. Principally, the initiative must come from the Applicant to indicate which claims, including alternative sets thereof, they wish to prosecute to grant. The independent claims submitted in the prosecution of the present application represented no patentable subject-matter, and the incorporation of some of the features from subsidiary claims were no real answers to the objections. The Appellant's argument that Claim 3 would have been an acceptable basis for amendment and that there was a failure to object to such a move on the part of the Examining Division, is unacceptable. It was made clear in the first communication of the Examining Division that the feature in question, the freedom from nodes, is a direct outcome of the process and cannot, as such, contribute to the inventive step. No new main claim was presented to the Examining Division before the refusal. It is therefore the view of the Board that it was rather a misconception, on the part of the Appellant, of the legal situation and of the intrinsic deficiencies of the case than any procedural violation, which inevitably led to a refusal of the application in the third communication. No reimbursement of the appeal fee is therefore justified.

Order

It is decided that :

1. The decision of the Examining Division of 14 December 1982 is set aside.

2. The application is remitted to the Examining Division for further substantive examination on the basis of Claims 1 to 13 originally submitted with letter of 8 June 1984 wherein Claim 1 is also limited to the features of Claim 7, with or without the further limitation to "linen", as requested in letter dated 12 March 1985, page 1, paragraphs 6 and 7.

3. The appeal insofar as it relates to requests based on unamended Claims 1 to 15 or 1 to 13, or 1 to 13 wherein Claim 1 is additionally limited to the features of Claim 4, as submitted in the letter dated 12 March 1985, page 1, is rejected.

4. The request for reimbursement of the appeal fee is dismissed.

Registrar: Chairman:

40/4/83