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D E C I S I O N
of 1 August 2002

Case Number: T 0930/99 - 3.2.7

Application Number: 92904512.8

Publication Number: 0525152

IPC: D21F 7/08

Language of the proceedings: EN

Title of invention:

Improvements in and relating to paper machine clothing

Patentee:

ALBANY INTERNATIONAL CORP.

Opponent:

Filztuchverwaltungs GmbH

Headword:

-

Relevant legal provisions:

EPC Art. 56, 100(b)

Keyword:

"Insufficiency - (no)"

"Inventive step - (yes)"

"Submission received at the EPO one month before the oral proceedings - (not late filed)"

Decisions cited:

T 0390/88, T 0182/89, T 0225/93

Catchword:

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Case Number: T 0930/99 - 3.2.7

D E C I S I O N
of the Technical Board of Appeal 3.2.7
of 1 August 2002

Appellant: ALBANY INTERNATIONAL CORP.
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Respondent: Filztuchverwaltungs GmbH
(Opponent) Nordendstrasse 68-70
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Representative: Albrecht, Ralf, Dipl.-Ing.
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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 7 July 1999
revoking European patent No. 0 525 152 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: A. Burkhart
Members: P. A. O'Reilly
J. H. P. Willems

Summary of Facts and Submissions

- I. The appellant (patent proprietor) filed an appeal against the decision of the Opposition Division to revoke the European patent No. 0 525 152.
- II. Opposition was filed against the patent as a whole by the respondent (opponent II) and another opponent (opponent I) and based on Article 100(a) EPC (lack of novelty and lack of inventive step) and Article 100(b) EPC (insufficient disclosure of the invention). Opponent I withdrew their opposition during the proceedings before the Opposition Division. The Opposition Division held that the invention was sufficiently disclosed but they revoked the patent based on lack of inventive step.

A number of documents were cited by both parties, but only the following are relevant to the present decision:

D1: S.A.M. El-Garf "Vernetzung von "MISR-NYLON" durch Reaktion mit Formaldehyd in Gegenwart von Bernsteinsäure als Katalysator", Faserforschung und Textiltechnik 27 (1976), vol. 12, Zeitschrift für Polymerforschung, pages 661-663.

D8: EP-A-0 392 682

D21: Encyclopedia of Polymer Science and Engineering, 2nd edition, vol. 4, John Wiley & Sons, New York, 1986, pages 350-352.

D22: Gutachterliche Stellungnahme von 17 October 2000, Prof. H. Höcker.

III. As a main request the appellant requested that the decision under appeal be set aside and that the patent be maintained as granted. The independent claim of the main request reads as follows:

"1. An article of paper machine clothing comprising monofilament and/or staple fibre in which the monofilament or staple fibre comprises a polyamide material which has been subjected to a treatment with an aqueous solution of aldehyde in the presence of a catalyst to effect partial cross-linking of the polyamide to provide a gel content thereof within the range of 0.1-75% accompanied by a reduction in crystallinity in the range of 1-25% compared with the uncrosslinked material."

In an auxiliary request filed with letter of 1 July 2002 the independent claim 1 comprised a combination of claims 1 and 2 as granted. This claim limits the gel content range to 10 - 65% as compared to claim 1 of the main request.

The respondent requested that the appeal be dismissed. At the oral proceedings which took place on 1 August 2002 the respondent further requested that the last submission (letter of 1 July 2002) of the appellant be disregarded as late filed.

IV. The appellant argued in written and oral submissions essentially as follows:

With regards to insufficiency the description of the invention gives many examples of the invention. The expression 'gel content' is well known in the art and the skilled person would have no difficulty in

measuring this parameter. It is only necessary for the skilled person to dissolve out the non-gel part of the polyamide and what is left is the gel. The amount of gel may then be measured and compared to the total quantity of polyamide to obtain the gel content. It would be routine work for the skilled person to decide on a suitable solvent for the particular polyamide under consideration, as well as the appropriate temperature and length of time for the measurement procedure. There is only one method of determining gel content, though the conditions for an individual measurement will depend upon the exact polyamide under consideration. The arguments of the respondent in fact seem more directed to the ground of lack of clarity which is not a ground for opposition.

With regards to inventive step the problem to be solved is to provide alternative polyamide machine fabrics with improved longevity (see page 2, lines 45 to 46 and 53 to 54 of the patent). Document D8 does not disclose any cross-linking. The appellant has carried out experiments in accordance with the teaching of document D8 and not found any gel content. The polyamides mentioned in document D8 have a high number of amine end groups. The teaching of document D8 is to extend the length of the polyamide molecules via the amine end groups so as to increase the molecular weight and result in an increase in intrinsic viscosity. Therefore document D8 teaches away from the invention. The appellant does not accept the theoretical arguments of the respondent that the skilled person would understand that cross-linking must take place in the method disclosed in document D8. The appellant does not accept the arguments of the expert in document D22 regarding the effects of the phenol groups and the alleged

heterogeneity of the reaction. Also, comparative tests of the invention and the teaching of document D8 are not necessary as the subject-matter of claim 1 is prima facie non-obvious.

Document D1 would not have been considered by the skilled person unless he had the information that cross-linking could improve longevity. The information contained in document D1 is too limited to help the skilled person, concerning merely breaking strength and breaking length. The document is merely a research paper with no practical applications.

V. The respondent argued in written and oral submissions essentially as follows:

With regards to insufficiency the skilled person does not know how to measure the gel content as there are many ways of doing this. Because of this the skilled person is unable to repeat the invention and would not know whether he is working inside or outside the limits of the claim. In order to measure the gel content it is necessary to specify the solvent used, the temperature and the length of the time allowed for dissolution. The description of the patent gives no indication of these, not even a single example. This is not a matter of measurement inaccuracy but of non-repeatability.

With regards to lack of inventive step the subject-matter of claim 1 is obvious in view of documents D8 and D1. Document D8 does not disclose expressis verbis any cross-linking of the polyamides. However, the skilled person when reading the document would understand that the disclosed aldehyde/phenol treatment of polyamide fibres would inevitably lead to cross-

linking. This view is supported by the expert evidence presented in document D22 in which the expert explains that he would expect the reaction disclosed in D8 to result in cross-linking of the polymers over the amide groups rather than linking at the end of the polymers over the amine groups to form longer chained molecules. The skilled person therefore understands that cross-linking takes place in this way. Cross-linking can result in an increase in intrinsic viscosity as indicated in document D21. Gel content as mentioned in claim 1 is just another expression for cross-linking. The skilled person reading document D8 therefore understands that cross-linking takes place and that is what is relevant. There is no point in carrying out experiments in accordance with the teaching of document D8 to check for cross-linking since the expert opinion is that the reaction is heterogenous making such experiments superfluous. The skilled person would consider document D1 as the document concerns cross-linking. From document D1 the skilled person would understand the effect of cross-linking on breaking strength and breaking length. The skilled person would understand that these properties have an effect on longevity. Hence the skilled person is lead to increase cross-linking to improve the longevity. If the appellant wishes to prove inventive step over the teaching of document D8 then it is up to the appellant to carry out comparative tests, as was required by the Opposition Division. It is up to the appellant to prove that the subject-matter of claim 1 is not obvious.

The last submission of the appellant (dated 1 July 2002) was sent to the respondent on 18 July 2002 which is too short a time before the oral proceedings appointed for 1 August 2002. There was not sufficient

time to consider the submission. The submission should therefore not be admitted into the proceedings as it was late-filed.

Reasons for the Decision

Insufficiency

1. The arguments of the respondent are directed against the expression 'gel content' and whether the skilled person would know how to measure this parameter. It is accepted by both parties that this is a well known expression in the art. The gel content is that part of a polymer which is insoluble due to cross-linking. It is the constant jurisprudence of the Boards that it is up to the opponent to prove that the patent does not meet the requirements of Article 100(b) EPC (see for instance T 182/89). The respondent alleged that there are various methods for measuring gel content with differing measurement accuracies. The respondent failed however to indicate any of these measuring methods. The Board cannot consider mere allegations which are not based on evidence. Moreover, any measuring method for a parameter has an inherent inaccuracy. This does not mean that a patent claim may not use such a parameter to define a feature.

The respondent referred to decision T 225/93. In that decision a situation was considered where there were three known measurement methods for a particular parameter. These methods were known to give differing results. In the present case however there is only one measurement method. After cross-linking a solvent is used to remove the part of the polyamide which is not

cross-linked since non-crosslinked polyamides are soluble. The remaining polyamide is defined as the gel. Thus, the percentage of gel, i.e. the 'gel content', may be measured. Although, in each individual measurement certain parameters may vary, e.g. type of solvent, necessary time for dissolution, there is no evidence that different results will be obtained for any particular measurement. The respondent has singularly failed to provide any experimental evidence to support this assertion. The respondent has provided a statement by an expert who clearly states that the determination of gel content is not a problem - "...die Bestimmung des Gelgehalts für den Fachman kein Problem darstellt". The expert does indicate that normally the exact experimental conditions would be mentioned when a measurement is reported so that the experiment can be exactly repeated. This however is normal in the scientific world where, for instance, even the type of thermometer used would be mentioned in respect of a temperature measurement to allow exact repeatability by other scientists. The expert opinion does not indicate that there is more than one result to be expected which would differ sufficiently from each other as to place the skilled person in a situation where he is unable to carry out the invention at all.

The argument of the respondent that there will be legal uncertainty since third parties will not know whether they are working within or outside the range of gel content specified in claim 1 is clearly an argument based on lack of a clarity. Since lack of clarity is not a ground of opposition this argument cannot be considered.

Since the appellant has shown that the skilled person

would know how to carry out the measurement of the gel content and the respondent has produced no evidence to the contrary the Board considers that the invention is sufficiently disclosed to enable the person skilled in the art to carry it out.

The ground of opposition under Article 100(b) EPC is therefore unfounded.

Inventive step

2.1 Nearest prior art

Document D8 is in the same technical area as the patent in suit and may be taken as disclosing the nearest prior art.

This document discloses an article of paper machine clothing comprising monofilament and/or staple fibre in which the monofilament or staple fibre comprises a polyamide material which has been subjected to a treatment with an aqueous solution of aldehyde.

2.2 Problem to be solved

The problem to be solved is to increase the longevity of paper machine clothing, see patent as granted, page 2, lines 45 to 46 and 53 to 54.

2.3 Solution to the problem

The solution to the problem is to carry out the treatment in the presence of a catalyst to effect partial cross-linking of the polyamide to provide a gel content thereof within the range of 0.1-75%.

The presence of the claimed range of gel content provides a fibre with improved mechanical, thermal and chemical resistance leading to increased longevity.

Claim 1 further specifies that the treatment is accompanied by a reduction in crystallinity in the range of 1-25% compared with the uncrosslinked material. However, in the opinion of the Board, this does not constitute a feature of the claimed paper machine clothing *per se*, but is rather a comparison with the clothing before treatment. Such a feature does not define further the claimed product and hence cannot be taken into account in the assessment of inventive step.

- 2.4 The solution to the problem is not obvious for the following reasons:

Document D8 is in the same technical field as the invention. The teaching of this document is to treat polyamides so as to increase their intrinsic viscosity. The intrinsic viscosity of a polymer is related to the molecular weight in that a higher intrinsic viscosity will imply a higher molecular weight. In order to measure intrinsic viscosity it is necessary that the polymer is soluble since intrinsic viscosity is a property of the solution. Document D8 therefore requires that no gel is formed since with gel formation a measurement of intrinsic viscosity is not possible. If it turns out, as argued by the respondent with the support of the expert evidence of document D22, that some cross-linking occurs in carrying out the method of document D8 then this cross-linking cannot be to such extent as to form a gel, since that cross-linking would eliminate the possibility of an increased intrinsic

viscosity. The appellant carried out the teaching of document D8 and indeed found no gel content. The respondent has provided no experimental evidence to the contrary. The skilled person reading document D8 would clearly understand that (a) links should be formed at the amine end groups to increase intrinsic viscosity, and (b) cross-linking to form a gel should be avoided as this prevents increased intrinsic viscosity. The skilled person might consider that some undesired cross-linking nevertheless occurs, but would understand that this cannot be sufficient as to cause a gel. From the evidence available the skilled person would also not find any gel content if he did carry out the teaching of document D8. Thus, the skilled person would understand document D8 as providing a teaching away from the formation of a gel.

Document D1 is a general review of some cross-linking effects on polyamides. This document discusses the effects of cross-linking on breaking strength and breaking length of polyamides. The amount of cross-linking involved is indicated per 100 monomer units. It is not possible to determine whether the amount of cross-linking could result in a gel content of less than 100%. The teaching of the document is thus towards considering the amount of cross-linking in polymers in which all the molecules are cross-linked, rather than the percentage of molecules that have any cross-linking. There is thus no indication in document D1 towards a gel fraction of less than 100%. The properties of the polyamides that are considered in document D1 have not been shown to be those that are relevant to improving the longevity of paper machine clothing. The breaking length and breaking strength cannot be undoubtedly said to be the relevant

properties for improved longevity.

In the opinion of the Board therefore the skilled person would not consider document D1 when wishing to improve the machine paper clothing known from document D8. Even if the skilled person did consider document D1 he would not find therein a teaching to provide a gel content lower than 100%, but rather a higher level of cross-linking.

The respondent has called for the appellant to carry out comparative tests. Such tests however are only then necessary when the subject-matter under consideration is prima facie obvious, cf. T 390/88. This not here the case as shown above.

- 2.5 Therefore, the subject-matter of claim 1 of the main request involves an inventive step in the sense of Article 56.

Request to disregard an allegedly late-filed submission

3. The last submission of the appellant was received by fax on 1 July 2002, i.e. exactly one month before the oral proceedings. The submission was thus received within the time limit of one month before the oral proceedings set by the Board in the annex to the summons to oral proceedings. The fact that the respondent only received a copy of the submission some time later (approximately two weeks before the appointed oral proceedings) cannot make the submission itself late-filed. The submission contained arguments, some photographs as evidence, and an auxiliary request. Arguments may be filed at any time during the appeal proceedings, including during an oral proceedings, so

that the retarded receipt of arguments by the respondent could not lead to the respondent being disadvantaged. The photographs were not relied upon by the appellant in their arguments presented at the oral proceedings and did not play a role for the Board in coming to their decision, so that the respondent was not disadvantaged in this respect. It was not necessary to consider the auxiliary request as the main request was allowable, so that also in this respect the respondent was not disadvantaged. For the above reasons the Board does not see any disadvantage to the respondent in the present case due to the retarded forwarding to him of the submission of the appellant. In summary, it may be said that the same decision would also have been arrived at by the Board also without the existence of the last submission by the appellant.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is maintained as granted.

The Registrar:

The Chairman:

D. Spigarelli

A. Burkhart