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**D E C I S I O N**  
**of 5 April 2001**

**Case Number:** T 0329/99 - 3.3.6

**Application Number:** 93900702.7

**Publication Number:** 0614403

**IPC:** B08B 3/14

**Language of the proceedings:** EN

**Title of invention:**

Process for removing contaminants from polyolefins for recycle

**Applicant:**

SOUTHERN RESEARCH INSTITUTE

**Opponent:**

-

**Headword:**

Polyolefin Recycle/SOUTHERN RESEARCH

**Relevant legal provisions:**

EPC Art. 123(2)

**Keyword:**

"Deletion of essential feature - not allowable"

**Decisions cited:**

T 0331/87, T 0823/96

**Catchword:**

A particular technical embodiment may be rendered obvious on the basis of the content of an application as filed without belonging to its explicit or implicit disclosure and, therefore, without serving as a valid basis for amendments complying with the requirements of Article 123(2) EPC

(No. 4.5).



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Chambres de recours

**Case Number:** T 0329/99 - 3.3.6

**D E C I S I O N**  
**of the Technical Board of Appeal 3.3.6**  
**of 5 April 2001**

**Appellant:** SOUTHERN RESEARCH INSTITUTE  
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**Representative:** Pellegrini, Alberto  
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**Decision under appeal:** Decision of the Examining Division of the  
European Patent Office posted 5 November 1998  
refusing European patent application  
No. 93 900 702.7 pursuant to Article 97(1) EPC.

**Composition of the Board:**

**Chairman:** P. Krasa  
**Members:** G. Dischinger-Höppler  
M. Tardo-Dino

## Summary of Facts and Submissions

I. The appeal filed on 29 December 1998 is from a decision of the Examining Division of 5 November 1998 to refuse European patent application No. 93 900 702.7 entitled "Process for Removing Contaminants from Polyolefins for Recycle". The patent application as filed originally comprised *inter alia* one single independent process claim reading:

"1. A process for treating polyolefin to remove polyester, and cellulosic contaminants therefrom which comprises contacting polyolefin contaminated with polyester and cellulosic contaminants with an aqueous composition of a hydroxide selected from the group consisting of alkali metal hydroxide, alkaline earth metal hydroxide and mixtures thereof; and with an oxidising agent."

II. The decision under appeal was based on an amended set of claims, including an independent Claim 1 which reads:

"1. A process for treating polyolefin to remove contaminants belonging to the group composed of cellulosic contaminants and polyester contaminants therefrom characterized by contacting the contaminated polyolefin with an aqueous composition containing a hydroxide selected from the group consisting of alkali metal hydroxide, alkaline earth metal hydroxide and mixtures thereof and an oxidising agent thereby causing degradation of said contaminants."

The sole ground for refusal was non-compliance of the amended claims with the requirements of Article 123(2)

EPC. The Examining Division held that the simultaneous presence of cellulosic and polyester contaminants was mandatory for the claimed process for treating polyolefin, whereas now in the amended claims subject-matter extended also to the treatment of polyolefin containing only one of these two contaminants.

III. With its statement of grounds of appeal, the Appellant (Applicant) requested as a main request "that the objected amendment to claim 1 be admitted as not contravening Article 123(2) EPC" which, by implication, is a request to set aside the contested decision and grant a patent on the basis of the claims rejected by the Examination Division. Further requests were made as a "priority subsidiary request" (sic) and a "least priority subsidiary request" (sic). The "priority subsidiary request" (hereinafter referred to as first auxiliary request) comprised an amended Claim 1 and a new dependent Claim "1bis" reading:

"1. A process for treating a polyolefin to remove contaminants therefrom characterized by contacting the polyolefin contaminated by at least a cellulosic contaminant with an aqueous composition containing a hydroxide selected from the group consisting of alkali metal hydroxide, alkaline earth metal hydroxide and mixtures thereof and an oxidising agent thereby causing degradation of said contaminant.

1 bis. The process of claim 1, characterized in that the polyolefin is contaminated also by a polyester."

The "least priority subsidiary request" (hereinafter referred to as second auxiliary request) comprises a Claim 1 which is said to be "the original form of

Claim 1" but has exactly the same wording as Claim 1 of the main request on which the contested decision was based.

IV. The Appellant submitted the following arguments:

- The object underlying the present application was to recover polyolefins freed from any cellulosic and/or polyester contaminants.
- The fact that a peculiar problem was created by the simultaneous presence of the cellulosic and polyester contaminants did not permit the conclusion that the process was inoperative in the absence of one of these two contaminants.
- A person skilled in the art would realize that the process would also be suited in cases where the contaminant is either only cellulosic material or only polyester material, since the mechanisms of degradation of these contaminants were described as being totally independent of each other.
- The amendments made to Claim 1 did not require any modifications of other features of the claims as was shown in the affidavit of Mr Ibay.
- Therefore, the amendments made to Claim 1 fulfill the criteria for allowable amendments as set out in decision T 331/87.

V. In a communication, the Board informed the Appellant of the fact that Claim 1 of the second auxiliary request could not be distinguished from that of the main request and of its opinion that the amended Claim 1 in

either version appeared to violate the requirements of Article 123(2) EPC, since its subject-matter was neither explicitly nor implicitly disclosed in the application as originally filed. Several reasons were given in this respect.

- VI. In a response, the Appellant reiterated the core part of its previously submitted arguments which consisted in stating that the disclosure of the application could not be construed as an intention to "disclaim" the validity and applicability of the process where only one of the two contaminants was present.

The Appellant addressed one single subparagraph of the Board's communication (i.e. 4.2 below) by merely stating that "the observations" made therein "appears to distort the meaning of certain specification of the process of the invention beyond the simple fact that, as said above, the treatment conditions described in the specification of the application are clearly such to be perfectly effective when both contaminants are present in the material to be treated".

The Appellant neither filed any further requests with respect to the claims nor did it request oral proceedings.

### **Reasons for the Decision**

The only point at issue is whether the claims as amended in the present main and auxiliary requests comply with the requirement of Article 123(2) EPC.

1. The effect of the amendments made to the claims of any of the Appellant's requests is that protection is now sought for a process extending to the treating of polyolefin for removing either only polyester (main request and second auxiliary request) or only cellulose (all requests) from the polyolefin so contaminated, whereas the claims as originally filed sought protection only for a process in which both polyester and cellulose are removed from the polyolefin.
  
2. The Appellant contended that it was clear from the description that the problem addressed by the inventors of the present application was to efficiently remove from a polyolefin material the most commonly found contaminants, namely polyester and cellulosic materials in order to recover a polyolefin freed of any polyester or cellulosic residue. Even if the process was described as particularly suited to overcome complications in the melt-processing of recyclable polyolefins created by the simultaneous presence of polyester or cellulose residues, a skilled person would clearly and unambiguously recognize that this same process would be perfectly suited to recover a decontaminated polyolefin also in cases where one of the two types of contaminants was absent. Therefore, in accordance with the test criteria set out in T 331/87 (OJ EPO 1991, 22), the presence of both contaminants was not explained in the disclosure of the application as filed as an essential feature.
  
3. Amendments made to a European patent application are only permissible if they do not "contain subject-matter which extends beyond the content of the application as filed" in accordance with Article 123(2) EPC.



Being uncontested that the now claimed only optional presence of either polyester or cellulose is not explicitly disclosed in the application as filed, it has to be determined whether claiming these particular embodiments can be based on an implicit disclosure. This has to be done on the basis of the overall disclosure of the whole specification. Since the application in suit concerns a process for a particular purpose by applying particular means, any information must be evaluated in the application in suit referring to the material to be treated, the purpose of the treatment and the means applied.

In the present case, the following passages of the application as filed concern these crucial points:

- 3.1 Under "Technical Field", it is indicated that the invention is concerned with removing certain contaminants from polyolefins and especially with removing polyester and cellulosic contaminants (page 1, lines 5 to 12).
  
- 3.2 In the section "Background Art", the problem is illustrated as arising from polyolefin bale wrappers contaminated with polyesters and cellulosic materials. It is indicated that a **unique problem** is created by the presence of both contaminants. The reason for this problem is seen in the fact that thermal degradation of the cellulosic material requires temperatures at which polyesters are melt processed, while at lower temperatures the filters are plugged by the cellulosic and polyester material. Mechanical methods and washing are said to not be satisfactory for this purpose (page 1, line 16 to page 2, line 3).

- 3.3 Under "Summary of Invention", it is set out that "the present invention is concerned with a process for removing polyester and cellulosic contaminants from polyolefins" (page 2, lines 7 to 27).
- 3.4 In the chapter "Best and Various Modes for Carrying out Invention" (page 2, line 32 to page 6, line 15) it is stated that used polypropylene bale-wrappers for bales of cotton and polyester fibres after use are typically contaminated with the following contaminants:
- 1 to 2 % cotton
  - 1 to 2 % polyester
  - 1 to 2 % paper (e.g. labels and tags)
  - < 1 % metal (e.g. wires, clips and staples)
  - < 1 % wood
  - < 1 % dirt
  - < 1 % grease and oil (page 3, lines 11 to 20).

To achieve the results desired by the present invention it is said to be **essential** to contact the contaminated polyolefin **with both** a hydroxide composition and with an oxidising agent (page 4, lines 4 to 6 and page 5, lines 5 to 7) which can be employed separately or simultaneously in the same aqueous composition (page 4, lines 22 to 27). In the latter case, the hydroxide is said to stabilize the oxidising agent so that it remains available for degradation of the cellulose (page 4, line 27 to page 5, line 4).

The hydroxide is described as degrading the polyester only, not the cellulose, but to aid in the latter's degradation insofar as it removes any wax present on the surface of cellulosic fibres (page 5, lines 7 to 10). The oxidising agent is described as degrading the

cellulose, but not the polyester (page 5, lines 10 to 12).

- 3.5 All examples of the application as filed illustrate the invention as a process for treating polypropylene fibres contaminated with both cellulosic and polyester material with an aqueous solution of sodium hydroxide and sodium hypochlorite.
- 3.6 None of the original claims suggests any treatment of polyolefin contaminated with either only cellulose or only polyester.
- 4.1 As follows from the above cited relevant passages of the description, the application in suit not only uses the term "polyester **and** cellulosic ..." whenever it refers to the main contaminants of the polyolefin to be treated, but also mentions one single or **unique problem** which only occurs during the melt-processing when both contaminants are simultaneously present (see 3.2 above). This problem would obviously not exist in the absence of one of these contaminants. Consequently, the above term cannot be taken as a mere enumeration of the main contaminants which may be present separately or in combination, but forms the basis of the invention made by recognizing and overcoming a specific problem arising during the melt-processing of particular waste polyolefins.

This conclusion is corroborated by the examples of the application in suit which all show that the claimed process solves this particular problem by degrading polyester and cellulosic contaminants simultaneously present in polyolefin with an aqueous composition of sodium hydroxide and sodium hypochlorite.

4.2 It is also corroborated by the explanation given for the degradation of cellulose on the one hand and polyester on the other hand. According to the application in suit, the mechanisms of these degradations are independent of each other. It is stated that the hydroxide only degrades the polyester but not the cellulose, and the oxidising agent only degrades the cellulose but not the polyester (page 5, lines 5 to 12). The hydroxide is further described as offering several other advantages which are interconnected with the efficiency of the oxidising agent, such as stabilization of the oxidant (page 4, line 25 to page 5, line 4) or removing any wax on the surface of cotton fibres (page 5, lines 8 to 10). No such effects are described for the oxidising agent with respect to the efficiency of the hydroxide. Thus, for those skilled in the art, the emphasis which is laid twice on the use - either simultaneously or separately - of both the hydroxide and the oxidising agent as being essential (page 4, lines 4 to 6, page 5, lines 5 to 7), only makes sense where cellulosic contaminants are present, either alone or in combination with polyester. It is not meaningful in those cases where - in accordance with the amended claims - polyester is the only contaminant. Nevertheless, the application in suit apparently nowhere suggests the use of hydroxide alone which would be logical if polyester were the sole contaminant to be degraded.

4.3 The Appellant in its response to the Board's communication doubted these observations as distorting the meaning of the disclosure, but did not give any reason whatsoever why the observations should not be correct.

- 4.4 The Board has not overlooked the statement given on page 5, lines 12 to 16 of the application as filed reading: "In addition, it has been found pursuant to the present invention that neither the hydroxide, oxidising agent or their combination adversely affect the properties of the polyolefin being treated to any noticeable extent."

This paragraph was referred to in Mr Ibay's declaration filed with a letter dated 17 December 1997 as a basis for the optional presence of polyester contaminants. However, when read in the context of the application's disclosure as a whole, it does not suggest to apply either only hydroxide or only the oxidising agent in order to remove either cellulose or polyester, but merely confirms the statement on page 2, lines 32 to 34, that polyolefin is not degraded by the chemicals used, irrespective of whether they are employed in succession or simultaneously in accordance with page 4, lines 22 to 27.

- 4.5 The Appellant stressed the argument that the description reported the most significant test results which concerned the most demanding condition of both contaminants being simultaneously present. This duty of disclosing the most important embodiment should not be interpreted as indicating that the process was inoperative in the absence of one or the other type of the contaminants. On the contrary, a person skilled in the art would directly recognize that the process would also be perfectly operative in such cases.

In the present case, the Board accepts the Appellant's argument that a skilled person may realize from the content of the application in suit that polyolefin only

contaminated with either cellulose or polyester could be treated by the same process, i.e. that the presence of an oxidant (hydroxide) would not impair the decomposition of polyester (cellulose), if present alone, by hydroxide (oxidant). This is particularly true as far as cellulose as the only contaminant is concerned (see 4.2 above). However, the removal of either cellulose or polyester would be based on a quite different concept than that provided by the unique problem solved by the process disclosed in the application in suit, namely according to the Appellant, on the concept of simply recovering a polyolefin free from any cellulosic and/or polyester contaminants. For such a concept, the application in suit does not provide a basis as shown above.

In the Board's opinion, a clear distinction must be made between the questions of whether a particular embodiment is disclosed by an application, be it explicitly or implicitly, or whether this embodiment is merely rendered obvious by the application's disclosure (see T 823/96 of 28 January 1997, not published in the OJ EPO, reasons No. 4). In other words, a particular technical embodiment may be rendered obvious on the basis of the content of an application as filed without, however, belonging to its explicit or implicit disclosure and, therefore, without serving as a valid basis for amendments complying with the requirements of Article 123(2) EPC.

5. It follows from the above reasoning that the now claimed presence of only one of the two contaminants, cellulose or polyester, was not included within the teaching of the application as filed. On the contrary, the Board finds that only the presence of both

contaminants was originally disclosed and described as an essential part of the invention, namely that part which represents the problem to be solved. The respective postulate set out in T 331/87 is, therefore, not fulfilled.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:

G. Rauh

P. Krasa