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Datasheet for the decision of 28 April 2010

Case Number: T 0369/08 - 3.3.03

Application Number: 02712108.6

Publication Number: 1368405

IPC: C08G 63/692

Language of the proceedings: EN

Title of invention:
Flame retardant polyester film

Patentee:
Dupont Teijin Films U.S. Limited Partnership

Opponent:
Schill + Seilacher GmbH
Mitsubishi Polyester Film GmbH

Headword:
-

Relevant legal provisions:
EPC Art. 54, 83, 114(2), 123(2)

Relevant legal provisions (EPC 1973):
EPC R. 55(c)

Keyword:
"Main request - novelty (yes)"
"Main request - sufficiency (yes)"
"Main request - added subject-matter (no)"
"Late filed document - *prima facie* relevant (yes)"
"Remittal (yes)"
"Apportionment of costs (to be decided)"

Decisions cited:
T 0611/90, T 1002/92, T 0758/99, T 0523/00, T 0874/03, T 0931/06

Catchword:
-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0369/08 **-** 3.3.03

D E C I S I O N
of the Technical Board of Appeal 3.3.03
of 28 April 2010

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Decision under appeal: **Decision of the Opposition Division of the European Patent Office dated 9 November 2007, posted 17 December 2007 rejecting the opposition filed against European patent No. 1368405 pursuant to Article 102(2) EPC 1973.**

Composition of the Board:

Chairman: R. Young
Members: M. C. Gordon
C. Vallet

Summary of Facts and Submissions

I. Mention of the grant of European Patent No. 1 368 405 with the title "Flame Retardant Polyester Film" in the name of Dupont Teijin Films U.S. Limited Partnership, in respect of European patent application No. 02712108.6, filed on 21 February 2002 as international application No. PCT/GB2002/000769, published as WO 2002/066538 on 29 August 2002, and claiming a priority date of 21 February 2001 from GB 0104277.9 was announced on 27 April 2005 (Bulletin 2005/17) on the basis of 11 claims.

Claim 1 read as follows:

1. The use of a copolyester of one or more dicarboxylic acid(s), one or more diol(s) and one or more copolymerisable phosphorus-containing flame retardant compound(s) wherein the phosphorus atom(s) are present in the copolyester in a group pendant to the polymer backbone, for the purpose of providing thermal stability and flame retardancy to an oriented film made from said copolyester, wherein the thermal stability is measured in terms of retention of ultimate tensile strength and/or elongation to break according to ASTM D882-88 in air at a temperature of 140°C over an extended period.

Claims 2 to 11 were dependent claims.

II. Notices of opposition were filed on:

- 11 January 2006 by Schill + Seilacher AG (OI) and
- 25 January 2006 by Mitsubishi Polyester Film GmbH (OII)

Opponent OI invoked the grounds of opposition pursuant to Art. 100(a) EPC (lack of novelty, lack of inventive step) and Art. 100(c) EPC (extension beyond the content of the application as filed).
Opponent OII invoked the grounds of opposition pursuant to Art. 100(a) EPC (lack of inventive step) and Art. 100(b) EPC (insufficiency of disclosure).
The following document was, *inter alia* cited in support of the oppositions by both opponents:

D1: US-A-4 157 436.

OI noted in its submissions that this document had been cited as "D4" during the pre-grant examination proceedings.

III. In a decision announced on 9 November 2007 and issued in writing on 17 December 2007 the opposition division rejected the oppositions.

(a) The patent in suit met the requirements of Art. 100(c)/123(2) EPC, reference being made to claim 1 as originally filed, and with respect to the specification of the measurement of thermal stability, to page 4 and page 19 lines 20-24 of the original application.

(b) The objections raised pursuant to Art 100(b)/Art. 83 EPC by the opponents and the findings of the decision in respect thereof can be summarised as follows, the *objections* being indicated by italics:

(i) *No lower threshold value was given indicating to which extent thermal stability properties should be retained*: In view of the results of the examples of the patent in suit "thermal stability" meant that the films had to completely retain ultimate tensile strength ("UTS") and/or elongation for at least 6 days in air at 140°C, i.e. that the properties after aging had to be at the same level as those of the starting polyester without any phosphorus compound;

(ii) *As copolyester films were sensitive to moisture at elevated temperatures the claimed use could not be carried out under humid conditions*: It was credible without proof that the polyesters used according to claim 1 were sensitive to hydrolysis and consequently that mechanical properties would not be retained under humid conditions. Paragraph [0011] of the patent in suit specified that thermal stability was to be measured "in dry air" "under substantially anhydrous conditions" wherein little or no degradation via the hydrolytic pathway took occurred. Furthermore claim 1 had to be read through the eyes of the skilled person taking into account this teaching of the description.

(iii) *The meaning of substituents R_5 and R_6 had been omitted from claim 5*: The omitted information was given on page 4 of the patent in suit and was thus available to the skilled person wanting to carry out the invention.

(c) The findings of the opposition division with regard to novelty (Art. 100(a)/54 EPC) can be summarised as follows:

– D1 disclosed "films" rather than "oriented films". D1 contained no disclosure of extruded film (which would necessarily be oriented). An argument of the opponents that polyester films

always represented oriented films was dismissed due to the absence of any supporting evidence.

– The functional feature characterizing the use as claimed was not disclosed in D1. The references to thermostability of the copolymer or articles made therefrom in D1 were restricted to behaviour during processing rather than under aging condition. Processing usually took place at temperatures higher than 140°C and under vacuum or nitrogen rather than in air. Not even the mechanical properties of the polyester, or articles made therefrom under short-time heating conditions were clearly deducible from D1. Accordingly the claimed use was novel in view of D1.

(d) The findings of the decision with respect to inventive step (Art. 100(a)/56 EPC) may be summarised as follows:

– By common consent D1 was the closest prior art;
– The feature that the film was oriented could not support an inventive step;
– The feature relating to thermal stability of articles made from the polymers under oxidising conditions was neither explicitly nor implicitly disclosed in D1, and was not deducible therefrom.

(e) Accordingly the oppositions were rejected.

IV. Notices of appeal against the decision were filed on:

- 18 February 2008 by OI and
- 26 February 2008 by OII

the prescribed fees being paid on the same respective dates.

OII withdrew its appeal by letter dated 8 April 2008.

V. The statement of grounds of appeal was filed by appellant/opponent OI on 21 April 2008.
Objections pursuant to Art. 100(a)-(c) EPC were maintained, which can be summarised as follows:

(a) Art. 100(c) EPC:

- the disclosure of thermal stability on page 4 the application as filed referred to that of the polymer, not of an article prepared therefrom;
- the final feature of claim 1, i.e. that relating to retention of mechanical properties before and after aging had been inadmissibly extended compared to the disclosure at the top of page 4 of the application by:
  - replacement of "thermal stability of the polymer" by "thermal stability";
  - "before and after aging" in connection with the retention of mechanical properties had been omitted;
  - "% elongation" had been replaced by "elongation to break"
- The final feature of claim 1 had further been inadmissibly extended compared to the disclosure

of page 19 lines 20-24 of the application as filed by:

- omission of the conditions of aging of a film sample (140°C in an oven);
- the introduction of an "and/or" condition rather than "and" for "ultimate tensile strength" ("UTS") and "elongation to break";
- the original wording on page 19 "aged for different time periods" had been replaced by "over an extended period"
- the standard referred to in the claim (ASTM D882-88) was stated to relate to the measurement of thermal stability instead of ultimate tensile strength and elongation to break, although this standard did not relate to measurements of thermal stability.

(b) Art. 100(b) EPC

The patent in suit failed to disclose the required magnitude of the thermal stability and flame resistance of a copolyester film in order for the specified use "of providing thermal stability and flame retardancy" to be fulfilled. In this connection the required comparison was between the properties of one and the same polymer before/after aging and not, as the opposition division had held, between two different polymers (see section III.(b).(i), above).
The standard specified in the claim required that the measurements be carried out at a relative humidity of 50±5% and a temperature of 23±2°C and also required a conditioning of the samples under these conditions for at least 40 hours prior to

carrying out the measurement. Thus the requirements of the standard and the maintenance of "substantially anhydrous conditions" as specified in paragraph [0011] of the patent were mutually exclusive.

(c) Art. 100(a)/54 EPC

The subject matter of claim 1 was anticipated by the D1, which disclosed that the flame resistant polyesters thereof could be employed to prepare fibres, boards and films, in particular due to their thermal stability. As there were only two types of film, namely oriented and non-oriented, the disclosure of the term "film" in D1 mandatorily encompassed oriented films. In any case the skilled person was aware that in particular thin films and thermally stable films were necessarily always stretched since the resulting orientation of the molecular chains significantly improvement the mechanical properties.

(d) Art 100(a)/56 EPC

Since D1 disclosed oriented fibres it would be obvious that the copolyesters could also be employed to form films, in particular oriented films having thermal stability because D1 described oriented fibres produced with a draw ratio of 3.8 (example 7).

VI. The patent proprietor, now the respondent replied with a letter dated 9 September 2008.
The main request was for dismissal of the appeal.
Alternatively maintenance of the patent in amended form on the basis of one of the first to third auxiliary requests was requested. Corresponding sets of claims were however not submitted at this stage.
The arguments advanced may be summarised as follows:

(a) Art. 100(c)/123(2) EPC:

- The feature that thermal stability was measured in terms of retention of certain physical properties was based on page 4 lines 1 to 11 in combination with page 19 lines 20-24 of the application as filed, reference being made to the WO publication;
- The term "thermal stability" referred to that of an article, in particular a film made from the polymer. This was apparent from page 3 lines 9-15 and 20-22 of the application and made explicit by page 4 lines 1 to 11 which explained that the thermal stability was determined in terms of specific mechanical properties before and after aging. The skilled person knew that these properties would be determined on a polymer article rather than on a polymer e.g. in pellet form. The specified ASTM standard could not be applied to pellets. This was confirmed by the final sentence in the indicated passage of page 4 of the application which referred to a polyester article and by the description of the method on page 19;

– The omission of the wording "before and after aging" did not result in an extension beyond the content of the application as filed. This phrase was disclosed at page 4 lines 5-8 of the application as equivalent in scope to "exposure in air to temperatures above ambient temperatures".
The wording employed in the claim, i.e. a temperature of 140°C and "extended period" had its basis at page 4 lines 4-5 of the application.
– The terms "% elongation" and "elongation to break" were used interchangeably in the application as filed as became apparent from pages 4 and 19 of the application.

(b) Art 83 EPC

– No evidence had been submitted that the copolyesters defined in operative claim 1 did not impart the properties of thermal stability and flame retardancy.
– The objection regarding the absence of threshold values was a matter governed by Art 84 EPC, not Art. 83 EPC and hence was not a matter for discussion in these proceedings.
– In any case analysis of the data showed, if the specification was properly construed, that these objections were without foundation.
Based on an extended version of Table 2B of the patent, showing in addition the measurement errors, it was clear that the retention in UTS of the control (no phosphorus compound) and example 1 were the same within experimental error. In assessing the retention the

appropriate comparison was with the pure polyester not containing the phosphorus modifier, but not a comparison of one and same film before/after aging. This was made clear in paragraph [0009] of the patent in suit. Accordingly the critical parameter specified in the claim was a relative one, not absolute. Regarding the determination of the physical properties it was incorrect to construe the patent as requiring that the measurements be carried out at 140°C under anhydrous conditions- these conditions applied only to the aging process. The mechanical properties were measured according to the specified ASTM test before or after aging, not within the confines of the oven used for the aging test.

(c) Art. 54 EPC:

- D1 did not refer to the thermal stability of the phosphorus containing copolyester or to the thermal stability of the end product, i.e. the film and hence could not disclose the claimed use.
- D1 did not disclose the technical effect specified in operative claim 1 as it was directed essentially only to the heat stability of the phosphorus compound itself during the polymerisation process and its effect on the degree of polymerisation attainable.
- D1 did not disclose an oriented film.

(d) Art. 56 EPC:

- The teachings of D1 concerned stability of the phosphorus compounds themselves under the conditions of preparation of the polyesters rather than of articles prepared from the resulting polymers thus
- D1 had no bearing on the effect demonstrated in the claimed use.

VII. On 11 February 2010 the Board issued a summons to attend oral proceedings.
In a communication dated 25 February 2010 the Board *inter alia* essentially concurred with the submissions of the respondent/patent proprietor concerning the nature of the teachings of D1 and its relationship to the use defined according to the operative claims.
The absence of the auxiliary requests referred to by the respondent/patent proprietor (see section VI, above) was noted.

VIII. By a letter dated 26 February 2010 the opponent and former appellant OII stated that it would not attend the oral proceedings.

IX. Together with a letter dated 1 March 2010 the respondent/patent proprietor submitted the three auxiliary requests referred to in its rejoinder to the statement of grounds of appeal.

X. Together with a letter dated 15 March 2010 the appellant/opponent announced that its legal status had changed, which change was duly registered by the Office, as announced in a communication dated 25 March 2010.

A further document was cited:

D7: "S.J. Chang: Polymer Degradation and Stability, Vol. 54, no. 2-3 (1996), pages 365-371".

The appellant/opponent observed that this document had been cited in the proceedings before the examining division as the closest prior art (designated D3 in those proceedings- see the International Preliminary Examination Report).

The submissions of the appellant/opponent OI can be summarised as follows:

- D7 related to the thermo-oxidative decomposition of phosphorus containing polyesters and solved the problem underlying the patent in suit;
- D7 exemplified *inter alia* PET having copolymerised therein units derived from the phosphorus compounds identified as "Phosgard" and "Ukanol", employed in the comparative and inventive examples of the patent in suit respectively;
- D7 disclosed that in simulated aging tests carried out under oxygen at 130°C those polyesters containing the "Phosgard" unit - identified in D7 as "PET-co-PEPP" exhibited significantly greater decomposition that either unmodified PET or that containing the "Ukanol" phosphate compound (identified in D7 as "PET-co-PEDDP");
- This teaching rendered the subject matter claimed, i.e. the use of the specified copolyesters in order to provide improved thermal stability obvious.

XI. Oral proceedings were held before the Board on 28 April 2010.

(a) *Art 100(c)/123(2) EPC*

The appellant/opponent objected that the conditions and timing employed for the measurement of aging were not completely specified in the claims. With regard to the conditions it was only stated that the **measurements** were carried out under the indicated conditions, although such interpretation was technically meaningless. The timing of the measurements, as explained at page 4, i.e. before/after aging was not specified in claim 1, meaning that this subject matter extended beyond the application as filed. The indicated parts of the description were in any case inconsistent with each other since page 4 of the application referred to the polymer whilst the claim and page 19 of the application referred to the film.

The respondent/patent proprietor explained that the measurement of thermal stability was set out in the application as filed, reference being made to page 4 lines 1-11 and page 19 lines 20-24. Since a document could be its own lexicon, as held in the case law of the Boards of Appeal, the term "Thermal Stability" in the claims had to be interpreted in this framework, leading to the conclusion that there was no extension of subject matter.

(b) *Art 100(b)/83 EPC*

The appellant/opponent conceded that its objections in this respect were at the border of Art. 83 and 84 EPC.
The aging resistance was determined according to the operative claims indirectly, i.e. by measurement of certain physical properties.
The data in the patent showed a decrease in the measured properties over the time of measurement, i.e. these properties were not "retained". The patent did not explain what amount of degradation could still be tolerated and hence where the limit for deeming a composition to exhibit "retention" of the indicated properties lay. This was exacerbated by the fact that the examples of the patent employed different aging times. Hence it was not known how to repeat the examples to establish whether a given composition met the requirements of the claim.
The respondent/patent proprietor objected that this was in fact an objection pursuant to Art 84 EPC and referred to the submissions made in the rejoinder to the statement of grounds of appeal (see section VI.(b), above).

(c) *Art. 54 EPC*

The appellant/opponent stated that the claims were directed to the use of a known polymer to provide a known product. As the polymer was known from D1 to be heat stable this was an inherent property and consequently would also be exhibited by articles made from the polymer, e.g. films.

The feature of orientation was also inherent since ca 70% of all films were oriented.
In particular D1 at col. 9, final section explicitly taught that the phosphorus compounds had no effect of lowering the molecular weight of the polyesters and consequently had no detrimental effect on the physical and colour properties of the resulting polyester shaped products.

The respondent/patent proprietor in addition to reiterating the arguments from the written procedure (see section VI.(c), above) argued that D1 failed to disclose two features of the claims, namely oriented films or the specified use of the polyesters.
Further, the processing conditions exerted a significant effect on the properties of fabricated articles. Orientation resulted in an increase in rigidity; however simply stretching a film did not necessarily and inevitably result in orientation. Consequently it was not correct to argue that properties of an article would inherently be determined by those of the polymer from which it was made.

(d) After deliberation the Board announced that the main request met the requirements of Art. 54, 83 and 123(2) EPC.

(e) *Art. 56 EPC - Admissibility of D7*

The appellant/opponent sought to invoke D7 as the closest prior art for consideration of inventive step pursuant to Art. 56 EPC, this document having

been cited for the first time with its letter of 15 March 2010 (see section X, above).
The respondent/patent proprietor requested that this document not be introduced.
The arguments of the appellant/opponent regarding the circumstance surrounding the citing of this document at this stage of the procedure can be summarised as follows:

- This document had been cited in the examination proceedings as the closest prior art and hence was known both to the opposition division and to the patent proprietor;
- This had now been cited in the light of the comments by the Board with respect to thermal stability made in its communication (see section VII, above). The communication had resulted in a reappraisal of this document. Its significance had not previously been appreciated;
- At the time of filing the opposition D1 had been considered sufficient, hence D7 had not been cited. The citing of this document now could not be construed as an abuse of procedure.

The arguments of the respondent/patent proprietor concerning the citation of D7 can be summarised as follows:

- This document had been filed at a very late stage;
- Documents cited in the search report did not automatically form part of the opposition proceedings;

- This document had not been cited in either notice of opposition, although other documents from the search report had been;
- The late citing of this document was an abuse of procedure. The opponent had known of this document for at least four years;
- The existence of an abuse of procedure was reinforced by the fact that the appellant/opponent had not sent a courtesy copy of the submission of 15 March directly to the respondent/patent proprietor.
- Any case based on D7 constituted an entirely new opposition. Thus if this document were to be admitted then the case should be remitted to the first instance.

The arguments of the parties concerning the question of *prima facie* relevance of this document can be summarised as follows:
The appellant/opponent:

- D7 addressed precisely the same problem as the patent in suit, i.e. resistance to thermally induced oxidative degradation of modified polyesters;
- The same modifiers (comonomers) were employed as in the patent.
- The same conclusions regarding the effects on thermal stability of the final copolyester in relation to the main chain/pendant phosphorous groups were reached, since:
- D7 explained that having a phosphorus link in the main chain resulted in chain scission and

hence a reduction in thermal stability. This did not happen when phosphorus was present in a pendant group, which thus gave better thermal stability.

- Although there were differences in the measurement conditions, e.g. D7 employed pure oxygen at 130°C for 12 hours rather than air at 140°C for a number of days and D7 employed direct measurement of degradation, i.e. weight loss rather than indirect measurements (mechanical properties) the teaching addressed the same problem as the patent in suit.
- D7 also referred to the formation of fibres and plastics including textiles and contained a direct reference to a patent family member of D1 in Footnote 4.
- There was no evidence that the morphology of the polymer e.g. in an oriented film exerted any effect on the properties; on the contrary the properties were determined solely by the chemical constitution of the polymer forming the film.
- In any case the claims did not specify the degree of orientation or crystallinity.

The arguments of the respondent patent/proprietor:

- D7 had been dealt with during the proceedings before the International Preliminary Examining Authority ("IPEA") in a letter dated 4 October 2002 filed together with the demand for examination. This letter ultimately resulted in the amendment which resulted in the patent being granted as was apparent from the International

Preliminary Examination Report ("IPER"). This letter was in the public domain and established that the arguments advanced therein had been accepted by the IPEA as constituting general knowledge.

- D7 considered only polymer chip, not articles, as followed from page 366 of the document. Consequently the results reported in D7 had been obtained on the basis of amorphous articles not oriented film. The degradation behaviour of a crystalline product, e.g. oriented film could not be predicted on the basis results obtained on polymer chip;
- Changes in mechanical properties of an oriented film could not be deduced from the behaviour of polymer chip, e.g. due to differences in the rates of gas diffusion arising from the morphology;
- The aging test in D7 had been carried out under fundamentally different conditions from those specified in the patent in suit. Thus in the examples of D7 oxidative degradation would have played a larger role than thermal degradation whereas in the patent in suit these two degradation pathways were in balance;
- D7 contained no information relating to the physical properties specified in the operative claims;
- In any case a certain amount of chain breakage could be tolerated without giving rise to a decrease in mechanical properties. Thus merely showing the existence of chain breakage would not mean that inevitably the physical properties

were also impaired.

(f) The respondent/patent proprietor requested that if this document was admitted that the case be remitted to the opposition division and an apportionment of all future costs arising from the resumption of the opposition proceedings be made.

The appellant/opponent did not resist the request for remittal but disputed that there was any basis in the EPC for the request for apportionment of costs. In any case according to Art. 104 EPC it was for the opposition division, not the Board to decide upon costs.

XII. The appellant/opponent requested that the decision under appeal be set aside and that European Patent no. 1 368 405 be revoked.

The respondent/patent proprietor requested that the appeal be dismissed. In the alternative it is requested that the patent be maintained in amended form on the basis of one of the sets of claims according to the first, second or third auxiliary requests, filed with letter of 1 March 2010 in that order:
The respondent requested that the case be remitted to the First Instance if document D7 were to be introduced in the proceedings and further requested an apportionment of costs.

Reasons for the Decision

1. The appeal is admissible.

2. *Main request - Art 123(2) EPC*

Page and line references of the application as filed relate to the WO publication.
The first phrase of claim 1 is based on claim 1 as originally filed (up to "..flame retardancy").
The feature "film" is disclosed in claim 2 of the original application (references being to the international publication).
The term "oriented" is disclosed at page 9 line 7 within a section referring to polyester film obtainable from the copolyester. This passage discloses that the film may be uniaxially oriented but is preferably biaxially oriented and that orientation (in general) may be accomplished by any process known in the art. Accordingly this passage provides a basis for the feature "oriented film".
The feature that the thermal stability is measured in terms of retention of ultimate tensile strength and/or elongation to break finds its basis at page 4 lines 5-7 which discloses the determination of ultimate tensile strength and/or "% elongation". Although this latter term is not identical to "elongation to break" it is apparent from the discussion of the examples at page 19 lines 22 and 23-24 and the heading of Table 2A on page 23 that the terms "% elongation", "elongation to break" and "elongation" are used interchangeably in the application as filed.
The specified ASTM norm is disclosed at page 19 line 23.
The conditions under which the aging is carried out, in

particular temperature of 140°C in air are disclosed at page 4 lines 4-8.

The *objections* of the appellant/respondent raised in the written and oral submissions (see sections V.(a) and XI.(a), above) and the findings of the Board in respect thereof are as follows:

– *"Thermal stability" related to the polymer, not an article*:
page 4 line 8 refers explicitly to a "thermally stable polyester article";

– *the phrase "before and after aging" had been omitted:*
Claim 1 specifies "retention of ultimate tensile strength and/or elongation". The wording "retention of mechanical properties" is employed in the description of the application (page 4 lines 6 and 7) where it is defined as the change in UTS and % elongation before and after aging whereby "aging" is defined as exposure in air to temperatures above ambient temperatures. The following sentence explains/clarifies that a thermally stable polyester article will retain, or suffer only minimal degradation to, the mechanical properties under these conditions.
According to the established case law of the EPO a document shall be read as a whole and consequently the claims in the light of the description i.e. a patent can be its own dictionary (T 523/00, 10 July 2002, not published in the OJ EPO, point 2 of the reasons, second bullet). Accordingly based on the disclosure of the description, the term "retention" of the specified properties has to be understood, in the context of the patent in suit, as a comparison

carried out "before and after aging" as explicitly stated in connection with this term on page 4 line 7. The absence of this phrase from the claim consequently does not result in an extension of subject matter beyond the content of the application as filed.

– *the final feature had been inadmissibly extended compared to the disclosure of page 19 lines 19-24 of the application as filed*:
Apparently the first part of this objection was directed to the absence of the term "oven" in the claim. Although this term is employed at page 19 detailing how the examples were carried out, it is not disclosed in the passage at page 4 which specifies the temperature conditions under which the aging is carried out as well as that this is carried out in air.
The "and/or" relationship between elongation to break and UTS is likewise disclosed at page 4 line 10.
The feature that the treatment in air is for an "extended period" is disclosed at Page 4 line 5.

– The objection that the specified standard was not concerned with measurement of thermal stability appears to arise from a misreading of the claim. The claim does not specify that the thermal stability *itself* is determined by the specified standard but that the thermal stability is determined **in terms** (emphasis of the Board) of retention of certain physical properties as determined by this standard.

Accordingly the features specified in operative claim 1 all have a basis in the application as filed.

No objections were raised against other claims of the main request, nor does the Board have any objections of its own.

Accordingly the main request meets the requirements of Art. 123(2) EPC.

3. *Art. 83 EPC*

3.1 The objections concerning the interpretation of the feature of "retention" of physical properties, i.e. alleged uncertainty regarding:

- the magnitude of thermal stability and flame resistance (statement of grounds of appeal, see section V.(b) above) and
- the amount of degradation which could be tolerated and hence where the limit for "retention" of the physical properties lay (at the oral proceedings before the Board, see section XI.(b), above)

relate to the scope of the claims, i.e. a matter governed by Art. 84. Since this feature was present in the granted claim this objection is not available to the appellant/opponent.

3.2 Regarding the alleged inconsistency between the measurement conditions identified in the standard and the conditions under which the thermal stability was measured (see section V.(b), above) it appears that the appellant/opponent was interpreting the claims as

requiring that the measurements of the indicated physical properties be carried out under the conditions specified for the aging. Quite apart from the fact that this is not what the specification says at paragraph [0011], this is a matter of interpretation of the claim which is governed by Art. 84 EPC and consequently this objection is likewise not available to the appellant/opponent.

3.3 In any case paragraph [0063] section (iv) of the patent in suit explains that the measurement is performed on samples aged for different time periods, indicating that the aging and measurement are separate stages. Further since the measurements of the physical properties are stated to be performed according to the indicated standard, the conditions under which these are carried out, e.g. any preconditioning steps to which the samples are exposed prior to measurement and the conditions prevailing during the measurements of the indicated properties are implicitly specified by reference to the standard.
Accordingly the patent in suit does disclose the manner in which the physical properties are to be measured.

3.4 The Board therefore comes to the conclusion that the there are no inconsistencies in the disclosure of the manner in which the measurements of the thermal stability are to be carried out.
As a consequence the objections raised by the appellant/opponent with respect to sufficiency of disclosure cannot be successful.

3.5 The Board therefore concludes that the patent in suit meets the requirements of Art. 83 EPC.

4. *Main request- Art. 54 EPC*

D1 was cited as novelty destroying.

4.1 This document relates, like the patent in suit, to flame retardant polyesters whereby the flame retardancy is imparted by including in the structure pendant phosphorus group (D1 claim 1, col. 1 lines 6-12, col. 2 lines 15-19 and 20ff.
D1 discloses as that these flame-retardant polyesters can be employed to produce melt-shaped products such as fibres or films (col. 2 lines 10-11), shaped products (col. 9 line 68), specifically fibres, films and boards (col. 12 lines 39-43).
According to col. 12 lines 8ff of D1 the phosphorus compounds are extremely stable against heat as compared to "usually used phosphorus compounds" and it is explained that since no side reaction occurs - such as gelation resulting from heat decomposition of the phosphorus compound upon the polycondensation reaction - the polyesters obtained are excellent in colour tone and have better physical properties than conventional flame retardant polyesters. Analogous disclosures are to be found at col. 2 line 3ff and col. 10 lines 12ff of D1.

4.2 Accordingly the teaching of D1 is that the phosphorus comonomers employed, which, like those specified in operative claim 1, have pendant phosphorus groups, give rise to advantages at the point of **preparing** the polyesters.
There is however no disclosure of the properties of the resulting polyesters upon exposure to e.g. high

temperatures and no other disclosure relating to the **use** of these particular polyesters to provide thermal stability to any article, regardless of its form (emphasis in both cases of the Board).

4.3 Further although D1 does mention films, it provides no more precise disclosure than this, i.e. there is no disclosure of oriented films.
Although it may be the case, as argued by the appellant/opponent, that a high proportion of polyester films are oriented (see section V.(c) and XI.(c) above) quite apart from the fact that no evidence has been advanced to support this contention, this is an argument relating to obviousness (Art. 56 EPC), not to novelty (Art. 54 EPC).
Similarly considerations of whether the skilled person would have expected the beneficial properties reported at the stage of manufacturing the polyesters to translate to benefits in products prepared therefrom, i.e. whether the properties of heat stability were inherent to the polyesters regardless of the physical form thereof (see section XI.(c), above) are also matters to be considered with respect to Art. 56 EPC, it being recalled that the claims are directed to a use, not to a product or a process for preparing a product.
It is therefore concluded that D1 does not teach that polyesters having in their structure the pendant phosphorus groups specified in operative claim 1 would be stable to exposure to air at 140°C let alone when in the form of an oriented film and hence does not - even implicitly - disclose the use specified in operative claim 1.

Novelty of the main request is therefore acknowledged

(Art. 54 EPC).

5. *Admissibility of D7 to the procedure - relevance*

In its letter dated 15 March 2010 the appellant/opponent cited a document which had not previously been cited in the opposition proceedings, namely D7 (see section X, above).

5.1 Since this document was not cited as part of the "indications of the facts, evidence and arguments" in either of the notices of opposition (R. 55(c) EPC 1973), it was not filed in due time (Art. 114(2)), and it is a matter of the exercise of discretion by the Board whether this document is to be admitted to the procedure.

5.2 As has been established in the case law the main criterion to be taken into account in deciding whether to admit late filed facts, evidence or arguments is relevance, in particular *prima facie* relevance. In decision T 1002/92 (OJ EPO 1995, 605), it was held with reference to the findings of G 9/91 and G 10/91, that late filed evidence going beyond that set out in the R. 55 EPC 1973 statement should only very exceptionally be admitted if such new material was "*prima facie* highly relevant". T 1002/92 clarifies this phrase as meaning that the late filed material "could reasonably be expected to change the eventual result and was thus highly likely to prejudice maintenance of the European patent" (T 1002/92, reasons 3.4).

5.3 According to the title, D7 is concerned with the thermal degradation of phosphorus containing polyesters.

This is the same field as the patent in suit.
The abstract of D7 further reveals that the phosphorus is incorporated into the polyester chain via copolymerisation employing phosphorus containing comonomers, which again is aligned with the patent in suit.
D7 carries out a comparison of the properties of two modified polyesters. From page 366 of D7 it is learnt that the material designated "PET-co-PEPP" has the phosphorus units in the main chain, corresponding to the structure of the comonomer compound "Phosgard PF100®" employed in the comparative examples of the patent in suit whereas "PET-co-PEDDP" has phosphorus in a pendant group and corresponds to the structure obtained using the compound identified as "Ukanol ES®", employed in the illustrative examples of the patent in suit.

The experimental section of D7 reports that thermal stability was measured by exposing the polyesters to oxygen at 130°C for periods of 12 hours and determining the weight loss and carboxylic group content after such treatment.
The results and conclusions of D7 are that the materials PET-co-PEDDP materials, i.e. having the phosphorus in pendant groups and corresponding to the structure specified in operative claim 1 of the patent in suit exhibit greater thermal stability than PET-co-PEPP, corresponding to the comparative materials of the patent in suit.
Thus D7 addresses the same general problem as the patent in suit and solves this in the same manner as the patent in suit, in particular in terms of the preferred phosphorus comonomer.

5.4 In view of these facts it has to be concluded that there are *prima facie* strong reasons to believe that this material is relevant and could prejudice the maintenance of the European patent or cause its scope to be limited (cf T 1002/92 reasons 3.4; see also T 874/03, 28 June 2005, not published in the OJ EPO, reasons 3.1).

5.5 At the oral proceedings the respondent/patent proprietor advanced a number of arguments to support its position that D7 was not relevant and hence should not be admitted to the procedure. In particular the respondent/patent proprietor discussed how the skilled person would understand the teaching of D7 and further in particular how this would be interpreted and analysed with respect to the use of the polyesters to provide oriented films and what conclusions might be drawn as to the properties of such films, in particular their thermal stability (see section XI.(e), above).

These arguments however did not address the considerations set out in T 1002/92, i.e. *prima facie* relevance but on the contrary went beyond this, constituting a detailed consideration of how the skilled person would in depth understand the teachings of D7 and relate these to aspects such as the effect of orientation of the film etc.
This is however a matter to be considered pursuant to Art. 56 EPC, i.e. inventive step if and when a document has been admitted to the procedure.

Thus the respondent/patent proprietor failed to provide any arguments as to why - *prima facie* - the skilled

person would have discounted the relevance of D7.

5.6 Since D7 is *prima facie relevant,* the Board considers it appropriate to exercise its discretion in favour of admitting this document to the procedure.

6. *Remittal to the first instance*

The request of the respondent/patent proprietor for remittal in the case that D7 were to be admitted to the procedure was not resisted by the appellant/opponent. The Board is also satisfied that this is the appropriate course of action in the circumstances.

7. *Request for an apportionment of costs*

7.1 D7 was cited at a very late stage of the procedure, i.e. after oral proceedings had been convened. This fact is not in dispute.

7.2 The respondent/patent proprietor objected to the manner in which D7 had been introduced to the procedure, i.e. the tardiness, which ultimately resulted in the decision to remit and requested that all future costs of the procedure be borne by the appellant/opponent (see section XI.(f), above).

7.3 In considering whether to order an apportionment of costs it has to be examined whether there is a cogent reason, e.g. strong mitigating circumstances for the late submission of this document (see for example T 611/90, OJ EPO 1993, 050, point 5 of the reasons, T 874/03, 28 June 2005, not published in the OJ EPO,

point 5 of the reasons, and T 931/06, 21 November 2008, not published in the OJ EPO, point 6.3 of the reasons.)

7.4 D7 was cited, according to the appellant/opponent (see section XI.(e), above) in response to the communication issued by the Board accompanying the summons to attend oral proceedings (see section VII, above). In this communication the Board indicated that it - provisionally - concurred with the conclusions given in the decision under appeal (see section III.(d), above) and also with arguments put forward by the respondent/patent proprietor in the rejoinder to the statement of grounds of appeal (cf section VI.(d), above) with respect to the relevance of the teachings of D1.

7.5 D7 had been cited in the pre-grant proceedings (designated "D3") and played a prominent role in those proceedings:

7.5.1 In the International Preliminary Examining Report (IPER) the International Preliminary Examining Authority (IPEA) indicated that an inventive step could probably be recognised with respect to this teaching if the thermal stability was to be defined more precisely, indicating in particular the features oriented film and the nature of the measurement, i.e. the mechanical properties specified in the operative claim.

7.5.2 During the examining proceedings before the EPO, the examining division followed this approach, and further required definition of the temperature at which the aging was to be carried out be introduced into the claim.

7.5.3 Thus the opponents at the time of formulating the notices of opposition would have been aware from the examination file - which was publicly available and consultable online - of the teachings of D7 and the role this document had played in the pre-grant proceedings.

7.6 It may well have been the case that when formulating the oppositions the opponents had come to the conclusion, in the light of the correspondence from the examination proceedings, that the teachings of D7 were not likely to lead to revocation of the patent. However in its rejoinders to the notices of opposition the patent proprietor argued that D1 did not relate to the stability of the polyesters *per se* but to the phosphorus compounds during the manufacture of the polyesters. This view was also taken by the opposition division in its communication accompanying the summons to attend oral proceedings.

Also in the decision this assessment of the relevance of D1 remained, as explained herein above.

7.7 Thus at the very latest after receipt of the decision of the opposition division the opponents would have been aware that D1 on its own was unlikely to result in revocation of the patent precisely because (in the view of the opposition division) the teaching of D1 was restricted to the stability of the phosphorus compounds during the preparation of the polyesters and not to the stability of the ultimate copolyesters.

7.8 The arguments of the respondent/patent proprietor in its rejoinder to the appeal were, as reported in section VI.(d), above consistent with this finding of the decision under appeal.

7.9 Thus the appellant/opponent has failed to demonstrate that there was any development during the appeal proceedings themselves which would have - on its own - led to a reappraisal of the significance of the prior art cited in the notices of opposition, in particular D1. On the contrary the only reason advanced was an internal one, i.e. that it had reviewed the documents upon receipt of the communication of the Board and changed its assessment of the significance of D7 (cf section XI.(e), above). In this context it is important to recall that the Board in its communication merely reflected the findings of the decision under appeal with respect to D1 but did not offer any new insights of its own.

7.10 Consequently the Board has to conclude that no mitigating circumstances or cogent reason for the late submission of D7 can be identified (cf section 7.3, above).

7.11 The late citing of D7 in effect has, furthermore, resulted in an entirely new case being presented for the patent proprietor to answer and this only 6 weeks before the oral proceedings before the Board. The consequence of this tardiness is that a further procedure before the opposition division and possibly the Board of appeal is required, which might not have been the case had this document been cited in a more

timely fashion, i.e. at the latest at the outset of the appeal proceedings.

7.12 However it is apparent that the costs arising will depend on the course of the future proceedings. The consequence of this is that the Board necessarily is not in possession of the necessary facts to decide upon an apportionment of costs.
Consequently the Board considers it appropriate not to make an "open ended" order of apportionment of costs as was done in the aforementioned T 611/90 but instead to follow the approach adopted in point 5 of the reasons of decision T 758/99 (25 January 2001, not published in the OJ EPO) in which the Board responsible refrained from making an "open-ended" award of costs and concluded that the appropriate course of action was to order that a decision on the request for apportionment of costs be taken at a later stage.

8. It is therefore incumbent upon the opposition division in its further prosecution of the case consequent upon the remittal to it by the Board, to consider and decide upon the issue of apportionment of costs in the light of the facts before it, in accordance with the power conferred upon it by Art. 104(1) EPC.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. Document D7 "S.J. Chang: Polymer Degradation and Stability, Vol. 54, no. 2-3 (1996), pages 365-371", is introduced in the proceedings.

3. The case is remitted to the First Instance for further prosecution.

4. A decision on the request for apportionment of costs will be taken at a later stage.

The Registrar: The Chairman:

E. Görgmaier R. Young