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**Datasheet for the decision
of 21 June 2019**

Case Number: T 1894/16 - 3.3.03

Application Number: 08787097.8

Publication Number: 2178976

IPC: C08L69/00, C08L51/00, C08K3/22

Language of the proceedings: EN

Title of invention:
AROMATIC POLYCARBONATE COMPOSITION

Patent Proprietor:
Mitsubishi Chemical Europe GmbH

Opponent:
Francesco Felisati
Internazionale Brevetti Ingg. Zini,
Maranesi & C. S.r.l.

Relevant legal provisions:
EPC Art. 56, 123(2)
EPC R. 80

Keyword:

Inventive step - (no) - main request
Amendments - added subject-matter (no) - Auxiliary Request 11
- occasioned by ground of opposition - (yes)
Remittal to the department of first instance

Decisions cited:

T 0615/95, G 0003/14



Beschwerdekammern

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Case Number: T 1894/16 - 3.3.03

D E C I S I O N
of Technical Board of Appeal 3.3.03
of 21 June 2019

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Decision under appeal: **Decision of the Opposition Division of the
European Patent Office posted on 26 July 2016
rejecting the opposition filed against European
patent No. 2178976 pursuant to Article 101(2)
EPC.**

Composition of the Board:

Chairman D. Semino
Members: M. C. Gordon
 W. Ungler

Summary of Facts and Submissions

I. The appeal of the opponent lies against the decision of the opposition division posted on 26 July 2016 rejecting the opposition against European patent number 2 178 976.

II. The patent was granted with a set of 17 claims, whereby claim 1 read as follows:

"Polymer composition containing the following components:

- (a) 30-97 mass% of aromatic polycarbonate,
- (b) 1-20 mass% of a metal compound capable of being activated by electromagnetic radiation and thereby forming elemental metal nuclei, and
- (c) 2.5-50 mass% of at least one rubber-like polymer, wherein the sum of (a)-(c) is 100%.

III. A notice of opposition against the patent was filed in which revocation of the patent on the grounds of Article 100(a) EPC (lack of novelty, lack of inventive step) and Article 100(b) EPC was requested.

The following documents, *inter alia*, were cited in support of the opposition:

- D1: WO-A-01/23189
- D3: US-B2-7 060 421
- D5: US-A-2003/166761
- D6: US-A-2008/171181.

IV. According to the decision, the requirements of sufficiency of disclosure were met. In this connection it was concluded that the claims provided an "open" definition in that other unnamed components could be

present (decision, section 4).

The patent was not entitled to the claimed priority date (decision, page 5, section 7). As a result, *inter alia* D6 was comprised in the state of the art pursuant to Article 54(2) EPC (decision, page 5, last paragraph and page 6, last paragraph).

Regarding novelty, the document D5 was relied upon. It was held that a multistep selection from the disclosure thereof was required in order to arrive at subject-matter corresponding to feature (b) of claim 1.

An inventive step was acknowledged. The closest prior art was held to be D1. With regard to D6 the decision acknowledged that the technical problem addressed was similar to that of the patent in suit (page 6, final paragraph; page 8 second paragraph of the decision). D1 was however selected as the closest prior art on the basis that the compositions of the examples thereof were very near to the claimed subject-matter, that D1 related to the same technical field and employed the same technology/mechanism (decision page 7, final paragraph).

The subject-matter claimed was distinguished from the disclosure of D1 by the content of rubber. As can be derived from the 5th paragraph on page 8 of the decision with reference to the analysis of D1 on page 6, the problem to be solved was considered - at least in one aspect - to relate to the provision of laser-markable compositions having better resistance to degradation in the presence of metal compounds capable of being activated by electromagnetic radiation. The problem was solved by adjusting the content of rubber. There was no indication to do this in the prior art

since the influence of the rubber on the properties of the composition was not reported in the prior art.

Accordingly the opposition was rejected.

- V. The opponent (appellant) lodged an appeal against the decision.

In the statement of grounds of appeal objections of lack of novelty in respect of D5 and lack of inventive step starting alternatively from D1 and D6 as the closest prior art were raised.

- VI. In the rejoinder the patent proprietor (respondent) maintained as main request rejection of the opposition. Auxiliary requests 1-8 from the opposition procedure were resubmitted and two further auxiliary requests numbered 9 and 10 were filed.

Claim 1 of auxiliary request 9 differed from claim 1 of the patent as granted (main request) in that the following definition of the metal compound was inserted at the end of the claim:

"wherein the metal compound is represented by the chemical formula AB_2O_4 or $B(AB)O_4$, wherein the A component of the formulas is a metal cation having a valence of 2 and is selected from the group consisting of cadmium, zinc, copper, cobalt, magnesium, tin, titanium, nickel, manganese, chromium, and combinations of two or more of these and the B component of the formula is a metal cation having a valence of 3 and is selected from the group consisting of manganese, nickel, copper, cobalt, titanium, aluminium, chromium, and combinations of two or more of these".

With a subsequent letter further experimental data were

submitted.

VII. In a further letter the appellant advanced comments relating to inventive step of the main request and, with respect to auxiliary request 9, raised issues relating to added subject-matter.

VIII. The Board issued a summons to oral proceedings and a communication.

With respect to inventive step, the Board considered that D6 was the closest prior art for the reason that the technical problem underlying D6 was more closely aligned with that underlying the patent in suit than the problem addressed in D1. The problem solved with respect to D6 was formulated as the provision of further compositions along the lines of those generally disclosed in D6.

With respect to auxiliary request 9 it was observed that a decision would have to be taken on admittance thereof to the procedure. Brief observations were made with respect to added subject matter (Article 123(2) EPC).

IX. With letter of 4 February 2019 the respondent submitted three further auxiliary requests numbered 11-13.

Claim 1 of auxiliary request 11 differed from claim 1 of auxiliary request 9 in that the following phrase was introduced at the end of the claim:

"wherein component (c) is an acrylate based rubber or a siloxane based rubber".

Submissions were made, *inter alia* with respect to

novelty over D5 and the admittance of the newly filed auxiliary requests 11-13.

X. The appellant made a further written submission with letter of 18 April 2019. *Inter alia* admittance of the latest auxiliary requests was disputed.

XI. Oral proceedings were held before the Board on 21 June 2019.

In the course of the oral proceedings the respondent modified the order of the requests in that auxiliary requests 11-13, filed with letter of 4 February 2019 were to be dealt with following the main request, the auxiliary requests 1-10 as filed with the statement of grounds of appeal to be addressed subsequently.

XII. The arguments of the appellant, insofar as relevant for the present decision, can be summarised as follows:

(a) Main request - inventive step.

D6 and the patent addressed the same problem, namely provision of compositions for laser direct structuring (LDS) and hence D6 represented the closest prior art. D6 disclosed PC/ABS as the base polymer and spinel compounds as the dopant, in particular Cu spinels. Thus D6 disclosed all three components as required by operative claim 1, but failed to disclose the proportions thereof. There was no evidence of any effect associated with the claimed ranges of components. In particular it was not shown that the reported degradation of the polycarbonate component upon exposure to electromagnetic radiation was particularly reduced when the amounts of components were confined to the

claimed ranges. On the contrary, an improvement compared to neat polycarbonate was also seen with amounts of components outside the claimed ranges. The objective problem had accordingly to be formulated as the provision of specific compositions following the general teaching of D6. The selected ranges of components had to be seen as arbitrary and hence obvious solution to the problem posed.

(b) Auxiliary request 11

(i) Admittance

This request had been filed late and diverged from the previous lowest ranked auxiliary request 10, compared to which the definition of the metal compound had been broadened. This broadening of the claim gave rise to new issues in comparison to the preceding auxiliary requests and consequently presented the appellant with a situation which could not have been foreseen.

(ii) Rule 80 EPC

The amendment of the definition of metal cations was not occasioned by a ground of opposition.

(iii) Article 123(2) EPC

The amendments were based on a selection from four different lists:

- lower limit of the range of component (b)
- newly added definition of metal compounds
(c) - this was based in part on the disclosure of the description, however each of the two lists had been modified compared to the original disclosure (thus two selections);
- definition of component (c).

Such a plurality of amendments could not be seen as the mere striking out of alternatives.

The elimination of ABS as one of the polymers was not supported by the description, since the majority of the examples employed this as the rubber component.

Similarly the restriction of the metal compounds meant that the significance of the examples had to be reassessed in terms of which were according to the invention and hence what these examples demonstrated with respect to the claimed subject-matter.

(iv) Further procedure

The case should not be remitted. All matters should be dealt with by the Board.

XIII. The arguments of the respondent can be summarised as follows:

(a) Main request - inventive step

The examples of the patent showed that addition of copper compounds to polycarbonate (PC) resulted in deterioration of properties. This was countered by addition of a rubber component. However the examples also showed that adding rubber resulted in deterioration of Izod properties of the polycarbonate, which in turn spoke against adding rubber as a physical property improving additive.

D6 was directed to moulded interconnect devices whereby the conductive tracks in one of three alternatives could be manufactured by means of LDS. PC/ABS was but one of the polymers considered. There was no direct disclosure of subject-matter corresponding to that of the patent in suit.

The patent demonstrated the sensitivity of PC to degradation under LDS process conditions, and that this could be mitigated by incorporation of a rubber. This was not rendered obvious by the prior art. D6 was concerned solely with the form of the interconnect device. It did not address the problem of stabilisation of PC or avoiding the degradative effects of the conditions required in LDS on the properties of PC. According to the disclosure of D6 the rubber - ABS - could be present in any amount in relation to the PC including vanishingly small amounts which would not give any effect. The presence of ABS was not linked in D6 to reduction of degradation of PC.

(b) Auxiliary request 11

- (i) Admittance (these arguments applied equally to auxiliary requests 12 and 13)

The submission of this request was a reaction to the position set out in the preliminary opinion of the Board with respect to the absence of any technical effect. The assessment of the Board gave rise to a new situation in the entire proceedings, and the patent proprietor should be permitted to provide requests to address this. To the extent that this request diverged from the previous lowest ranked auxiliary request - 10, the divergence was minimal and was also a consequence of the new situation arising as a result of the position of the Board.

- (ii) Rule 80 EPC

The amendments made were directed to overcoming the defect with respect to inventive step identified by the Board. The amendments in respect of the metal compound were in order to delete clearly impossible "embodiments", e.g. metal ions with incorrect valencies.

- (iii) Article 123(2) EPC

The basis for the amendment of claim 1 was originally filed claim 8. The restriction to the LDS additive was the result of striking out of a small number of

alternatives, not the singling out of a specific embodiment. This was permissible as confirmed by the Case Law.

With respect to the limitation to specific rubbers, the examples provided a clear basis for the restriction now made.

(iv) Further procedure - remittal

The respondent expressed no preference as to whether the Board should deal with all matters or remit the case to the opposition division for further prosecution.

XIV. The appellant requested that the decision under appeal be set aside and the patent be revoked. Furthermore, it requested that auxiliary requests 11 to 13 not be admitted into the proceedings.

XV. The respondent requested that the appeal be dismissed (main request), or that the patent be maintained in amended form on the basis of auxiliary requests 11 to 13 filed with letter dated 4 February 2019, or on the basis of auxiliary requests 1 to 10 filed with the statement of grounds (in the order of requests indicated).

Reasons for the Decision

1. Main request - inventive step

Different documents were considered for the objections of lack of novelty (D5) and as closest prior art for the objection of lack of inventive step (D6).

Accordingly it is possible to consider the matter of inventive step without first taking a decision on novelty.

Furthermore, since the extent that the findings of the Board on inventive step of the main request on the basis of D6 are negative, it is in any case not necessary to consider novelty in respect of D5.

1.1 Closest prior art

The patent in suit is directed to the provision of a polymer composition for producing a circuit carrier. The polymer matrix contains a metal compound capable of activation by electromagnetic radiation, forming elemental metal on which conductive tracks are then grown (paragraphs [0001], [0002]).

According to the decision and, at least in one approach of both parties at the outset of the written appeal proceedings, the closest prior art was considered to be D1 which relates to the provision of laser markable compositions. These are required to develop legible markings upon exposure to laser (Section "Background of the Invention", in particular the first paragraph thereof).

D6 which belongs to the state of the art pursuant to Article 54(2) EPC in view of the invalidity of the priority claims as determined by the opposition division and not contested by the respondent, relates to the production of high current traces on moulded interconnect devices. According to paragraphs [0007] and [0008] a "path" is generated on the surface of the substrate by exposure to laser light and an interconnect trace is grown on the path. Although the

focus of D6 is on the 3-dimensional shape of the substrate, the basis of the technology is the aforementioned generation of conductive traces.

The technology with which D6 is concerned is the same as that of the patent in suit, i.e. the production of circuit carriers. D1 in contrast concerns a different technology.

Accordingly it is considered that only D6 can be considered as the closest prior art.

1.2 Distinguishing feature

D6 relates to moulded interconnect devices ("MID" - claim 1, paragraph [0001], [0007]). The document does not contain any specific examples.

In paragraph [0033] it is disclosed that the MID is made from a photosensitive plastic with high thermal shape stability, *inter alia* PC/ABS. It is stated that the plastic is photosensitive due to being doped. In one embodiment the dopant is a non-conductive organic metal complex. In a further embodiment the dopant is a non-conductive spinel based metal oxide, reference being made to US-A-7 060 421, i.e. D3.

However D6 does not provide any disclosure of the proportions of components to be used.

Thus the subject-matter claimed is distinguished from the closest prior art by the defined amounts of the three components.

The respondent argued (section XIII.(a), above) that according to the disclosure of D6 the ABS could be

present in vanishingly small amounts such that the polymeric component consisted in effect solely of polycarbonate.

The Board does not find this argument persuasive. In D6 PC/ABS is disclosed as one of the polymer components, i.e. as a closed, defined "unit" or "entity". This indicates that both named polymers have to be present in significant or meaningful amounts, e.g. the ABS must be present in such an amount that its influence on the properties of the overall PC/ABS composition is detectable. Any other interpretation would be inconsistent with the way this component is presented.

1.3 Technical effect

The examples of the patent show either compositions lacking one or the other of the components (metal compound or rubber-like polymer) as comparative examples or examples wherein the three components are present in the amounts required by the claim.

Thus there are no examples which relate to the identified distinguishing feature - the proportions of the components - and consequently no evidence for a technical effect associated with this feature.

1.4 Objective technical problem, its solution

In the light of the foregoing the objective problem can only be formulated as the provision of further compositions according to the teachings of D6.

This problem was solved by defining the broad ranges for the amounts of each component according to claim 1.

1.5 Obviousness

D6 specifies the components which are to be present, but with no information as to the amounts thereof. In the course of preparing compositions as generally disclosed in D6 some amounts of each of the components would automatically have to be employed - this is inherent to the nature of a composition. Accordingly, the skilled person seeking to implement the teaching of D6 necessarily had to select or define proportions for the components.

As noted above, the evidence of the patent only allows the conclusion that the ranges employed gave rise to compositions which were suitable for LDS applications, which is exactly the result which would be expected from the disclosure of D6.

There is however no evidence for any technical effect associated with the ranges of the components defined which does not arise with amounts outside these ranges.

Accordingly the only conclusion that can be reached is that the subject-matter claimed represents an arbitrary limitation of the teaching of D6 that inevitably arises when seeking to put the teachings thereof into practice. A limitation of this nature is within the routine abilities of the skilled person to accomplish and does not require the exercise of an inventive step.

As a consequence the requirements of Article 56 EPC are not satisfied.

2. Auxiliary requests 11-13 - Admittance

2.1 As noted in section VI, above, according to the decision under appeal the closest prior art was considered to be D1.

The appellant in the statement of grounds of appeal in one approach followed this. In an alternative approach, D6 was considered as the closest state of the art.

The respondent based its defence of inventive step on D1 with only a very brief additional reference to D6.

2.2 The Board in its communication came to the conclusion that D1 could not represent the closest prior art, since it related to a different technical problem to that underlying the patent. D6 in contrast addressed the same technical problem. Moreover the problem was formulated for the first time as the provision of further compositions along the lines of those generally disclosed in D6.

2.3 Thus the nature and focus of the proceedings in respect of inventive step have been modified as a consequence of the preliminary findings of the Board.

2.4 This course of the proceedings could not have been foreseen by the respondent at the outset of the appeal proceedings.

2.5 Accordingly the Board considers it equitable to permit the respondent to submit amended claims to take account of this situation.

2.6 The auxiliary requests 11-13 also cannot be seen as late filed, since the filing thereof was precipitated

by the position of the Board. Furthermore the requests were filed promptly after the issue of the communication of the Board.

2.7 In view of this, the Board finds it appropriate to exercise its discretion under Article 13 RPBA by admitting auxiliary requests 11-13 into the proceedings.

3. Auxiliary request 11

3.1 Allowability - Rule 80 EPC

Claim 1 of auxiliary request 11 defines the metal cations for component (b), i.e. the metal compound. The purpose of this amendment was to increase the distinction with respect to D6 by restricting to certain metal compounds.

The list of metal cations is adapted from the wording of paragraphs [0018] and [0019] of the patent as granted. However certain further amendments have been made. For example clearly erroneous - because chemically impossible - entries have been removed. Thus in paragraph [0018] the "A" cation is defined as a divalent cation. However in section numbered (i) in paragraph [0019] aluminium is listed as such a divalent cation. This is clearly incorrect. Similarly in the following sub-paragraph (ii) relating to the "B" trivalent cations magnesium is to be found which is likewise chemically nonsense. Such members are no longer present in the list of metal cations in claim 1 of auxiliary request 11.

Whilst Rule 80 EPC is intended to preclude "tidying up" amendments of the patent as granted by undertaking

amendments not occasioned by a ground of opposition, in the present case the amendment made relates to introducing a passage from the description of the granted patent. To the extent that the amendment is directed to overcoming a ground of opposition pursuant to Article 100 EPC this is not objectionable. The next step, the excision from the imported passage of embodiments which are - clearly - incorrect and would give rise, as a direct result of the amendment, to objections of lack of clarity (Article 84 EPC), is also not objectionable having regard in particular to the Order of G 3/14 (OJ 2015, 102).

For these reasons the Board finds that the requirements of Rule 80 EPC are met.

3.2 Article 123(2) EPC

The features of the amended claim 1 are based on the disclosures of claim 1 and page 5, line 35 as far as the preferred range for the amount of component (b) is concerned.

The metal compounds for component (b) are disclosed as preferred at page 4 line 35 to page 5, line 6, with the same observations with regard to omission of "impossible" embodiments as discussed above in respect of allowability pursuant to Rule 80 EPC and few additional omissions.

The final feature of the claim, i.e. the definition of the rubber component is based on the disclosure of claim 8 of the application as originally filed, whereby two of the three rubber-like polymers have been retained.

It is considered that the effect of the amendments in particular of features (b) and (c) is to shrink the total number of alternatives covered by the claim whilst nevertheless retaining the generic character thereof. This is in line with the approach deemed allowable in the Case Law, e.g. T 615/95 (of 16 December 1997, section 6 of the reasons).

Accordingly the Board considers that no defects pursuant to Article 123(2) EPC arise as a result of these amendments.

4. Further procedure - remittal

The situation with respect to inventive step has changed compared to that existing before the opposition division as a result of the Board's conclusion that D6 alone is suitable to represent the closest prior art, and the consequent dismissal of D1.

Under these circumstances, and in view of the limitations introduced as an attempt to overcome the inventive step objections, the case is in substance different to that decided upon by the opposition division. In view of this, and the form of the claims now constituting the first auxiliary request i.e. the request designated "auxiliary request 11", it is considered appropriate that the Board not deal further with the case but remit the matter to the department of first instance for further prosecution.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the department of first instance for further prosecution.

The Registrar:

The Chairman:



G. Nachtigall

D. Semino

Decision electronically authenticated