BESCHWERDEKAMMERN DES EUROPÄISCHEN PATENTAMTS

BOARDS OF APPEAL OF THE EUROPEAN PATENT OFFICE

CHAMBRES DE RECOURS DE L'OFFICE EUROPEEN DES BREVETS

A		B		C	X

File No.: T 0338/90 - 3.3.3

Application No.: 82 107 292.3

Publication No.: 0 072 536

Classification: H01B 1/24

Title of invention: Foamable electroconductive polyolefin resin compositions

D E C I S I O N
of 21 October 1993

Applicant: -

Proprietor of the patent: The Dow Chemical Company

Opponent: Hüls Troisdorf Aktiengesellschaft

Headword: -

EPC: Art. 56, 104(1)

Keyword: "Inventive step (confirmed)" - "Costs awarded against party who failed to appear"

Headnote
Catchwords

Case Number: T 0338/90 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 21 October 1993

Appellant: (Opponent)
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Abt.: Patente/Lizenzen
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Representative:

Respondent: (Proprietor of the patent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office dated 11 December 1989 and issued on 27 February 1990 rejecting the opposition filed against European patent No. 0 072 536 pursuant to Article 102(2) EPC.**

Composition of the Board:

Chairman: R.A. Lunzer
Members: H.H.R. Fessel
M.K.S. Aúz Castro

Summary of Facts and Submissions

I. The mention of the grant of European patent 0 072 536 in respect of European patent application No. 82 107 292.3 filed on 12 August 1982 claiming a JP priority of 13 August 1981 (JP-125876/81) was announced on 25 September 1985 (cf. Bulletin 85/39). The patent was granted on the basis of 7 claims of which the independent Claims 1 and 3 read as follows:

"1. A foamable polyolefinic resin composition for an electrically-conductive foam comprising: a mixture of 70 to 95 percent by weight of a polyolefinic resin with 5 to 30 percent by weight of an electrically-conductive, hollow particulate furnace black having a specific surface area of 900 square meters or more per gram, and a blowing agent, wherein the furnace black and blowing agent are homogeneously dispersed in the polyolefinic resin."

"3. An electroconductive polyolefin resin foam containing 70 to 95 percent by weight of a polyolefinic resin and 5 to 30 percent by weight of an electrically-conductive, hollow particulate furnace black having a specific surface area of at least 900 square meters per gram."

II. A Notice of Opposition was filed on 25 June 1989 by Dynamit Nobel AG, now Hüls Troisdorf AG, alleging lack of novelty and of inventive step (Art. 100(a) EPC) of the subject-matter claimed in all of the claims.

The opposition was supported *inter alia* by:

(7) Product Data Bulletin: KETJENBLACK(R) EC Bulletin No. 75-9, 1975, Armak Co.,

(8) Bulletin No. 12-100, March 1981, KETJENBLACK(R) EC, Noury Chem. Corp.,

(C) US-A-4 231 901, and

(D) GB-A-1 001 982.

III. By a decision given at the end of oral proceedings on 11 December 1989 and issued in writing on 27 February 1990 the Opposition Division rejected the opposition and maintained the patent as granted.

Novelty had no longer been disputed since the Opponent conceded that document (C) did not explicitly disclose the use of hollow particle carbon black.

The Opposition Division saw the problem being solved with regard to the closest prior art (C), as providing a foamable polyolefinic resin composition for producing electrically-conductive low-density foams of closed fine cell structure with excellent shock-absorbing properties. As demonstrated in the Examples, three quarters of the cells in every product according to the invention had a closed cell structure, whereas in the comparative Examples less than one third of the cells were closed. This effect was held to be unexpected and advantageous for an application where shock-absorbence was of importance. No evidence to the contrary was produced by the Opponent so that the Opposition Division did not hesitate in concluding that due to the use of

hollow particle carbon black as filler in the claimed composition an unexpected solution to a genuine problem was convincingly demonstrated.

IV. On 24 April 1990 an appeal was lodged against that decision together with payment of the prescribed fee. The patentability of the subject-matter of all the claims (viz. Claims 1 to 7) was attacked under Article 100(a) EPC as in the opposition brief. A Statement of Grounds was received on 9 June 1990.

V. Upon request of both parties oral proceedings were held on 21 October 1993. The Appellant having been duly summoned did not appear, and upon a telephone inquiry made by the Board when the oral proceedings were due to start, the Appellant indicated that it did not intend to appear.

In its written submissions the Appellant contested the arguments relied on in the decision under appeal. It argued that the claimed subject-matter lacked novelty with regard to the teaching of (C) which required the carbon black there used to be conductive, and have a particle size below 40 millimicrons and a specific surface area of about 900 to 1200 m^2/g. Since there was only one known carbon black having these characteristics, viz. Ketjenblack(R) EC, disclosed in (7) and (8), novelty would be prejudiced by (C).

As to inventive step, it argued that it was known from (7) to reduce resistivity dramatically by adding even low amounts of Ketjenblack(R) to plastics such as styrene-butadiene rubber and polyethylene. A man skilled in the art would thus expect polyethylene foam having the characteristics of the foam claimed in the patent in suit to be obtainable by the addition of a blowing agent to a composition known from (7). Since the patentee did

not allege that any new or unexpected effects were produced, the mere addition of a blowing agent to a resin to produce a foam did not amount to an inventive step.

No evidence has been provided by the Respondent to show that a carbon black was known having the characteristics stated in Claim 1 which was not a conductive furnace black having hollow particles.

VI. The Respondent argued that the Appellant's interpretation of the teaching of (C) was not based on facts but on wishful thinking. (C) disclosed the use of a particulate material which could be *inter alia* a carbon black. An example given therein for an extra-conductive oil-furnace carbon black was Vulcan XC72. Consequently it could only be concluded that Ketjenblack(R) EC might be a useful carbon black to be used in the open cell foams of (C). This did not suggest that said carbon black might be used in polyolefin foams having a large quantity of closed cells. Moreover the foams of (C) were impregnated with a binder and carbon black. No hint was given in the prior art that an electroconductive foam having a high degree of closed cells and having excellent shock-absorbing properties may be formed from a resin comprising a hollow particulate electrically conductive furnace black having a surface area of 900 m^2/g or more.

VII. The Appellant requested that the decision under appeal be set aside and that the patent be revoked.

The Respondent requested that the appeal be dismissed and the costs it has incurred in the oral proceedings be refunded by the Appellant.

Reasons for the Decision

1. The appeal is admissible.

2. Nowhere in the cited prior art was a foamable polyolefinic resin composition comprising a mixture of a polyolefinic resin (70 to 95% by weight) with 5 to 30% by weight of an electrically-conductive, hollow particulate furnace black and a blowing agent disclosed. The electrically-conductive carbon black used in (C) was Cabot XC72, which was not said to be in the form of hollow particles. As to the foam *per se* claimed in Claims 3 to 7 of the patent in suit, it has a cell structure different from that of the foam disclosed in (C).

   The Board considers thus the subject-matter of Claims 1 to 7 to be novel over the cited prior art.

   No evidence was provided in the proceedings by the Opponent that the carbon black used in (C) viz. Cabot XC72 was a hollow particulate furnace black. The mere possibility of using Ketjenblack(R) EC, known from (7) and (8) to have hollow particles, as a carbon black as defined in Claim 6 of (C) does not affect novelty. (D) neither disclosed the compositions claimed in Claims 1 and 2, nor the foams claimed in Claims 3 to 7 of the patent in suit.

3. In the decision under appeal (C) was regarded as the closest prior art, and the Board sees no reason to deviate therefrom.

3.1 Said document disclosed an electrically conductive foam adapted for use with electronic components sensitive to static charges viz. one having a surface resistance as

low as e.g. 10,000 ohms/square inch. That foam consists essentially of an open-cell polymeric foam such as a polyurethane foam, the possibility of using alternatively a polyolefin foam, e.g. polyethylene and polypropylene being mentioned (column 3, lines 4 and 5). It is impregnated with electrically conductive particulate material, such as carbon black having a surface area ranging from 100 to 1200 m^2/g (see Claim 6) and a film-forming polymeric-binding material securing the conductive particulate material to the foam (see Claim 1).

3.2 The patent in suit is directed to a foamable polyolefinic resin composition for an electrically-conductive foam comprising a mixture of a polyolefinic resin, an electrically-conductive, hollow particulate furnace black having a specific surface area of 900 m^2/g in contrast to carbon black commonly used to improve conductivity of foams and a blowing agent (see Claim 1) which leads when foamed to a substantially closed cell foam.

3.3 In the light of the closest prior art (C) the technical problem underlying the patent in suit can be seen in providing a foamable resin composition for an electrically-conductive foam enabling a man skilled in the art to produce foams of the closed cell type by foaming the said composition, instead of impregnating an open-cell foam with carbon black and binder.

In other words the problem may be seen in providing a composition leading when foamed to a product different from that disclosed in (C) i.e. to a substantially closed-cell foam being electrically conductive.

3.4 With regard to the results indicated in Tables 1 to 3 of the patent in suit the Board is satisfied that the above problem was effectively solved by using a hollow particulate furnace black having a specific surface area of 900 m^2/g or more.

3.5 Insofar as the Appellant argued that the problem was to achieve electrical conductivity, it is observed that that problem had been solved by (C).

Both the foams according to (C) and those according to the patent in suit are e.g. used for packaging electronic parts sensitive to static electricity but those of the patent in suit in addition thereto protect said parts against impact due to the shock-absorbing characteristics of the closed-cell material (cf. column 3, lines 53 and 54 of (C) and page 4, lines 56 and 57 of the specification of the patent in suit).

While the argument that polyolefin foams can be made with open or closed pores at will by the choice of suitable foaming agents and of the temperature of treatment of the foam is accepted in principle, there was no evidence that closed cell polyolefin foams could result from the selection of the appropriate types of carbon black.

4. It remains to be decided whether the claimed subject-matter involves an inventive step when applying the problem-solution approach to the problem specified above in points 3.3 and 3.4.

4.1 As indicated in 3.1 above, (C) teaches the improvement of the electric conductivity of e.g. polyolefinic foams being of the open-cell type by impregnating them with a binder and a particulate material e.g. a carbon black having a surface area up to 1200 m^2/g. Said foams may be

used as are the foams of the patent in suit for packaging electronic parts, however nowhere in (C) are closed-cell foams mentioned, nor is there any mention of the possibility of producing them through the use of a specific carbon black.

4.2 Product data Bulletins (7) and (8) disclose a carbon black having the characteristics of the carbon black used in the patent in suit. The advantages over hitherto known carbon blacks were indicated and suggestions for applications were made. Advantages specified were a higher effectiveness in reducing the volume sensitivity of plastics and elastomers enabling the user to reduce the quantity to be applied and thereby improve mechanical properties in comparison with other conductive blacks. Nowhere in that document were foams mentioned, still less that the said carbon black could have an influence on the cell structure of foams.

The product data bulletins thus do not contain any hint towards solving the said problem, nor would a man seeking to solve said problem combine the teachings given in (C) relating to impregnating open cell foams with (7) or (8) relating to solids.

4.3 (D) disclosed a semi-conductive composition comprising a copolymer of ethylene, a petroleum wax and a dispersed conductive carbon. The problem to be solved with said composition was to provide a semi-conductive composition which could be applied by hot melt technique directly to the conductor, eliminating the use of an impregnated fabric which was the practice in the past. The conductive carbon is in general either ethylene black or an oil furnace black known in the art and being finely divided. Neither the carbon black specified in the patent in suit, nor any form of foam (open or closed cell) is mentioned in (D).

It follows that (D) cannot hint, either alone or in combination with the documents (C), (7) and/or (8), at the solution of the said problem.

4.4 For the reasons given above the Board considers the subject-matter of the independent Claims 1 and 3 to involve an inventive step.

The subject-matter of Claims 2 and 4 to 7 falls wholly within the subject-matter of the independent claims and is thus equally patentable.

5. The same conclusion would be reached if (7) or (8) were considered to represent the closest prior art.

The problem to be solved would then be seen in providing a foamable resin composition as specified in Claim 1 having a low volume resistivity and good shock-absorbing characteristics when foamed, i.e. a foam of the closed cell type.

Since no hint is given in (7) or (8) as to foams at all, a man skilled in the art would not expect to get a closed cell product instead of an open cell one when using a polyolefin resin, Ketjenblack and in addition thereto a well-known blowing agent. In fact such a result was not to be expected since the Appellant did not dispute that a man skilled in the art would know that an electrically-conductive carbon black was more apt to agglomerate than ordinary carbon black, leading to a fissure of the cells upon expansion (see page 2, lines 15 to 18 in conjunction with Table 2 of the patent in suit).

6. Both parties requested oral proceedings in case their requests did not succeed. As appears from paragraph V above, oral proceedings were held on 21 October 1993.

The Appellant, however, although duly summoned, did not appear at these proceedings and its representative informed the Board upon a telephone inquiry, made at the time the proceedings were due to start, that he did not intend to appear. According to Article 104(1) EPC each party to the proceedings shall meet the costs it has incurred unless, for reasons of equity, a different apportionment of costs incurred during the taking of evidence or in oral proceedings is ordered. The behaviour of the present Appellant in failing to give any notice in advance that it would not appear at the oral proceedings, and thereby causing unnecessary expense is not consistent with the exercise of due care in the defence of its legal rights (T 323/89, OJ EPO 1992, 169; see also Singer's Commentary on the EPC, Karl Heymanns Verlag, 1989, under Article 104, Note 6, page 423 of the German text). In these circumstances, the Board considers that, for reasons of equity, an apportionment of costs incurred in the oral proceedings should be ordered in favour of the Respondent as requested.

29/10/93

Order

For these reasons, it is decided that:

1. The appeal is dismissed.

2. The costs of the Respondent incurred in the oral proceedings are to be refunded by the Appellant.

The Registrar: The Chairman:

E. Görgmaier R. Lunzer