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**D E C I S I O N**  
of 23 January 2003

**Case Number:** T 1281/01 - 3.5.2

**Application Number:** 93305337.3

**Publication Number:** 0586058

**IPC:** H01B 7/34

**Language of the proceedings:** EN

**Title of invention:**

Multi-layer power cable with metal shield free to move relative to adjacent layers

**Patentee:**

PIRELLI CABLE CORPORATION

**Opponent:**

Alcatel Kabel Beteiligungs-AG

**Headword:**

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**Relevant legal provisions:**

EPC Art. 54, 56, 108

EPC R. 78, 81, 82, 100, 101

**Keyword:**

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**Decisions cited:**

J 0017/98

**Catchword:**

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Case Number: T 1281/01 - 3.5.2

**D E C I S I O N**  
of the Technical Board of Appeal 3.5.2  
of 23 January 2003

**Appellant:**  
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**Respondent:**  
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**Representative:** Abbie, Andrew Kenneth  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 30 March 2001  
rejecting the opposition filed against European  
patent No. 0 586 058 pursuant to Article 102(2)  
EPC.

**Composition of the Board:**

**Chairman:** W. J. L. Wheeler  
**Members:** F. Edlinger  
B. J. Schachenmann

## Summary of Facts and Submissions

I. This is an appeal against the decision of the opposition division rejecting the opposition against the grant of European patent No. 586 058.

II. Claim 1 of the patent as granted has the following wording:

"An electrical power cable having an imperforate metal shield (3) intermediate a jacket (12) and a core of the cable including a conductor and being formed by a metal strip with overlapping edge portions (1, 2) bonded together with an adhesive (4) which permits relative movement of said portions without causing any fluid passageway therebetween when the cable is subjected to repeated temperature changes corresponding to conductor temperature changes from about 20°C to about 130°C, and wherein movement of said shield with respect to the core and the jacket on expansion and contraction of said shield when the cable is subjected to such temperature changes is not significantly restricted except by friction."

Claims 2 to 15 are dependent on claim 1.

III. Among the documents considered by the opposition division in the decision under appeal, the following three were relevant in the appeal proceedings:

D1: DE-A-2 732 652

E1: US-A-3 651 244 and

E2: DE-C-3 114 185.

- IV. Notification of the decision under appeal dated 30 March 2001 was addressed to Mrs B, who had been authorised (together with Mrs F and two further representatives at the opponent's intellectual property department) and appointed as representative of the opponent by letter dated 18 June 1999. With a letter dated 1 February 2001 and received at the EPO on 8 February 2001, Mrs B had informed the EPO that the present file had been transferred to "Cabinet" F/L ("le dossier en référence a été transféré à") and that Mrs F would act as the opponent's professional representative from that time on and any correspondence should be sent to her, Mrs F, at the address of said "Cabinet". Shortly afterwards, another professional representative, Mr D, had informed the EPO by letter dated 28 February 2001 (received on 6 March 2001) that he had taken over the representation of the opponent and that any correspondence should be sent to him.
- V. The EPO sent a communication dated 23 July 2001 to the proprietor's representative and to the opponent's representative Mr D informing the parties that no appeal had been filed against the opposition division's decision and that opposition proceedings were accordingly terminated.
- VI. With a letter dated 16 August 2001, Mr D informed the EPO that he had only received a copy of the decision on 14 August 2001 after making a telephone call to the EPO. He attached copies of the letters cited under point IV above and emphasized that he was the last appointed representative and that he should have been duly notified. Therefore, he considered that the opposition division's decision had to be deemed to be delivered on 14 August 2001.

- VII. Notice of appeal was filed with letter dated 4 October 2001 and received on 5 October 2001. A statement setting out the grounds of appeal was received at the EPO on 12 December 2001.
- VIII. Oral proceedings were held before the Board on 23 January 2003. The question whether an admissible appeal had been filed in time was discussed first and a decision was pronounced on this point before substantive issues concerning the allowability of the appeal were discussed.
- IX. The appellant opponent essentially argued as follows:

The appeal was filed in time, ie within two months after 14 August 2001 when the opponent's appointed representative had been notified of the decision under appeal. It was clear from Mrs B's letter dated 1 February 2001 that she had ceased to be the opponent's appointed representative in the present case before the decision under appeal was sent to her, and that Mrs F had been appointed as a professional representative of a "Cabinet" outside the opponent's company. After he, Mr D, had been asked by Mrs F to take over the case, he had informed the EPO that he had taken over the representation. In accordance with usual practice, he could have expected that, after his letter had been received on 6 March 2001, the EPO would send all further correspondence to him at the address indicated in his letter. Since he was the last appointed representative, the decision under appeal should have been addressed to him. Therefore the opponent had not been duly notified of the decision before 14 August 2001 and the present appeal was filed within the time limit required by the Convention.

An object of the opposed patent was to protect a cable from the ingress of moisture under its normal operating

conditions when a cable was subjected to repeated temperature changes from ambient temperature to normal and overload or emergency conditions (ie 20°C to 90°C and as high as eg 130°C; cf application as filed, page 7, last five lines). A copy of DIN 57298 (1979) had been filed with the statement of grounds of appeal in order to show that the person skilled in the art would understand that nothing else was meant by "conductor temperature changes from about 20°C to about 130°C" (claim 1 of the opposed patent). Since the expansion coefficients of the materials used in the metal and insulation layers of the cable differed largely, the adhesive bonding of the edge portions of the metal shield had to be sufficiently elastic to allow thermal expansion and contraction "without causing any fluid passageway therebetween". Concerning the movement of the metal shield with respect to the core and the jacket, the characterisation that it was "not significantly restricted except by friction" did not exclude some bonding between the shield and the adjacent layers. Firstly, the term "significantly" was a very vague definition of the kind of restriction. Secondly, the jacket (12) could be extruded over the metal shield (3) in one of the embodiments, as could be seen from Figure 2 of the patent specification. Thirdly, the proprietor himself had declared before the examining division (letter dated 22 November 1996, page 2, paragraph 3) that "free to move" did not mean "does not bond" or "no bonding between the adjacent layers".

The cable disclosed in D1 (Figure 1) had a jacket, a core and an intermediate metal shield (6) with overlapping edge portions bonded together with an adhesive (5) as specified in claim 1 of the opposed patent. The adhesive permitted relative movement of the edge portions as set out in claim 1 of the opposed patent. This followed from page 8, paragraph 2 and

page 9, paragraph 1, where it was said that the adhesive bonding had to be soft and elastic so that it did not lose its sealing capacity when the cable was subjected to repeated temperature changes under normal or overload conditions. Adhesive of the same kind was provided between the shield and the core in D1 (page 7, last six lines). The movement of the shield with respect to the core was not significantly restricted by the adhesive because it was non-hardening adhesive and permitted relative movement. Moreover, under overload conditions, heat was produced in the conductor (1) of the cable and the more rapidly expanding insulation layers would press against the metal shield (6). This would not cause a movement between core and shield, but a sliding motion of its overlapping portions exactly as in the case of a cable in accordance with the opposed patent. The ensuing movement of the shield with respect to the jacket would be restricted by friction but not by the adhesive layer (7) between the shield and the jacket because the adhesive used for this layer was again of the same soft and elastic kind (see claim 2 of D1). In this respect, the statement in the patent specification, page 3, lines 4 and 5, that the shield of D1 was "joined to the jacket by a different adhesive" was not correct. When the cable cooled down, it was the more rapidly contracting jacket which applied pressure on the metal shield and frictional force on its overlapping edges. Thus, if frictional forces acted on the metal shield when the cable was subjected to repeated temperature changes, the friction was essentially the same as with the cable of claim 1 of the opposed patent. The subject-matter of claim 1 thus lacked novelty in view of the disclosure of D1.

If the Board did not accept the argument that the same temperature range was disclosed in D1, then this feature would be the only difference with respect to the cable disclosed in D1. However, the specification

of this temperature range could not render the subject-matter of claim 1 inventive, because it was normal for such cables, as already explained.

Another objection of lack of inventive step based on E1, as a starting point, in combination with E2 or the common general knowledge in the art was presented in writing and in the oral proceedings, but later withdrawn.

X. The respondent proprietor essentially argued as follows:

The opponent had been duly notified of the decision under appeal by the registered letter with advice of delivery which had been sent to Mrs B because, in view of Rule 101(6) EPC, she had still been an authorised representative and, pursuant to Rule 81(2) EPC, notification to any one of several representatives was sufficient. Mrs B's letter dated 1 February 2001 had merely informed the EPO that Mrs F, who had already been an authorised representative, had moved to a new address, but it did not contain a clear and unambiguous communication of termination of Mrs B's authorisation in the meaning of Rule 101(6) EPC. Sending the decision to Mrs B might be seen as a less convenient choice of an authorised representative but it was in line with Rule 81 EPC. Consequently, the term for filing an appeal pursuant to Article 108 EPC had expired on 9 June 2001. The appeal had been filed out of time and therefore did "not exist".

The feature of claim 1 of the opposed patent specifying that "movement of said shield ... is not significantly restricted except by friction" was framed to meet the practical realities of cable production. It did not preclude the possibility of some (low-level) adhesion or bond between the parts. Examples which produced no



essential bond were given in the patent specification (page 4, lines 17 to 33). It was important that, if there was any restriction of movement of the metal shield with respect to the core and the jacket, then this was no more than friction and that this was true throughout the temperature range set out in claim 1.

D1 was concerned with the problem of producing waterproof high voltage cables in which corrosion was to be avoided. A strong bonding between the core and the metal shield was the fundamental teaching of D1 (claim 1, characterising portion; page 9, lines 20 to 25). The adhesive had to remain in place during thermal expansion and contraction and a strong resilient force had to ensure that the shield contracted with the core on cooling (D1, pages 8 and 9, bridging paragraph). The bonding between the core and the metal shield might allow some relative movement between the parts, but it was clear that it was not such that the movement of the shield was not significantly restricted except by friction. This would be contrary to the teaching of D1. The subject-matter of claim 1 was therefore both novel and inventive in view of D1.

DIN 57298 should be disregarded by the Board because it was late filed, not highly relevant and there was no evidence that Table 26 of DIN 57298 was common general knowledge in the art at the priority date of the opposed patent. Moreover, D1 could not be combined with DIN 57298 in assessing novelty which had been the only objection based on D1 in the proceedings leading to the decision under appeal.

E1 was not concerned with the problem of preventing moisture ingress and providing a transversely waterproof cable, and disclosed a bridging tape to protect the jacket but not an adhesive between the overlapping edge portions. E2 disclosed a cable where

tape and sheath were firmly bonded to each other, ie an arrangement which led to one of the problems solved by the invention (cf page 2, lines 47 to 55 of the patent specification). Therefore, it was not obvious to a person skilled in the art to combine the teachings of E1 and E2, and even their combination would not lead to the subject-matter of claim 1 of the opposed patent.

- XI. The appellant opponent requested that the decision under appeal be set aside and that the European patent No. 586 058 be revoked.
- XII. After the Board had taken a decision on the admissibility of the appeal, the respondent proprietor requested that the appeal be dismissed and that the patent be maintained.

### **Reasons for the Decision**

#### 1. *Filing of an admissible appeal*

- 1.1 The first issue to be addressed in relation to the present appeal is whether or not the appeal can be deemed to have been filed in time. The answer to this question depends on the date on which the decision under appeal was duly notified to the representative then acting for the appellant opponent.
- 1.2 According to Rule 81(1) EPC, if a representative has been appointed, notification shall be addressed to him. Further in accordance with Rule 81(2) EPC, if several such representatives have been appointed for a single interested party, notification to any one of them shall be sufficient. In this context, it has to be borne in mind that the EPC distinguishes between an appointment of a representative concerning a specific European

application or patent (Rule 26(d), Rule 55(d) and Rule 100 EPC) and the authorisation of representatives which may cover more than one European applications or patents (Rule 101(1) EPC; cf J 17/98, OJ EPO 2000, 399, points 4.1 to 4.3).

1.3 In the present case, there is general agreement that Mrs B had been a representative who had been authorised and appointed by the appellant opponent until the filing of her letter dated 1 February 2001. It is equally not contested that Mr D's letter informing the EPO of his appointment as a representative of the appellant opponent had been received at the EPO on 6 March 2001, ie before the decision under appeal dated 30 March 2001 was sent to Mrs B. Further, the date on which Mr D received a copy of the decision under appeal, ie on 14 August 2001, is equally not disputed.

1.4 The minimum effect of Mrs B's letter dated 1 February 2001 informing the EPO that the present file had been transferred to "Cabinet" F/L was that she had ceased to be an **appointed** representative of the appellant opponent. This is the unambiguous meaning which can be derived from the "transfer" of the file to a professional representative outside the opponent's intellectual property department. It may be left open whether the authorisation of Mrs B had been withdrawn by the appellant opponent. In any case, notification of the decision under appeal to Mrs B was not in line with Rule 81(1) and (2) EPC because she had ceased to be one of the **appointed** representatives. It follows that the decision under appeal had not been duly notified by sending it to Mrs B and the legal fiction that the decision under appeal was actually delivered on the

tenth day following its posting (Rule 78(2) EPC) does not apply in the present case. Pursuant to Rule 82 EPC, the decision under appeal shall be deemed to have been notified on 14 August 2001 when Mr D received it.

1.5 Notice of appeal was filed on 5 October 2001, within two months after the date of receipt of the decision (Article 108 EPC in combination with Rules 78(2) and 82 EPC). Since the appeal does not have any other deficiency set out in Rule 65(1) EPC, the appeal is admissible.

2. *Novelty and inventive step*

2.1 An essential object of the opposed patent is to protect an electrical power cable from the ingress of moisture. Special problems arise with a cable of the type having an imperforate metal shield formed by a metal strip with overlapping edge portions. E1 (Figures 1 to 4), published 1972, discloses one of the earliest examples of this type of metal shield and is mentioned in the description of the patent specification (page 2, line 7). Several attempts at solving the special problems occurring at the overlapping edge portions of a metal shield located between insulative or semi-conductive cable layers, which have thermal expansion coefficients much higher than that of the metal shield, are then described in the patent specification (page 2, lines 32 to 55). The attempts included solutions with no bonding and solutions with bonding of the edge portions. The metal shield is either bonded to the jacket or to the core (as in D1; cf page 2, line 56 to page 3, line 5 of the patent specification).

2.2 The description of the patent specification explains that, in order to avoid buckling or fractures with the specified temperature cycling, the metal shield is made "free to move" with respect to both sides, core and

jacket. The adhesive for bonding the overlapping edge portions is selected to permit relative movement and to ensure that it remains intact and returns substantially to the form which it had prior to heating when the cable is cooled to about 20°C after heating. The metal shield thus forms a (floating) moisture barrier on its own which may be in contact with either the outer layer (9) of the core (Figure 1) or the jacket (Figure 2), or with no direct contact to either of these (page 4, lines 3 to 15). The feature of claim 1 that the movement "is not significantly restricted except by friction" is therefore essential to the concept of the opposed patent in that there is no intentional bonding or fixing to a material on either side of the shield. Any restriction (which is practically unavoidable for cable constructions of this type) should be "insufficient to prevent movement of the metal shield" (page 4, lines 16 to 54).

- 2.3 According to D1, the adhesive used for bonding the edge portions permits relative movement of the portions as a result of the flexibility or elasticity of the selected adhesive. The metal shield is bonded to the core with the same adhesive which may also be used for joining the shield to the jacket (D1, claims 1 and 2; page 7, last six lines; page 8, paragraph 2). The acknowledgement of the prior art disclosed in D1 at page 2, line 56 to page 3, line 5 of the opposed patent includes a statement that the shield is joined to the jacket by a "different adhesive". This is only correct for certain embodiments of D1 (claim 3; pages 9 and 10, bridging paragraph). According to D1, the material of the adhesive and its application between the metal shield and the core have to be such that a strong bonding with good elastic recovery is obtained. This is said to ensure that the cable completely returns to the form which it had prior to an overload condition. With previously known cables the moisture barrier was formed

at the inner side of the jacket. The metal shield often kept its expanded diameter and hindered the jacket from recovering its previous form. In contrast to such prior art, the moisture barrier at the outer layer of the core, formed by a non-hardening adhesive including the edge portions of the metal shield, is said to prevent voids and cracks (D1, claim 1; page 8, line 2 from below to page 9, line 25; page 11, lines 2 to 7 from below).

2.4 The metal shield of the cable disclosed in D1 is therefore not free to move with respect to the core and the jacket, in the meaning of the terms of claim 1 of the opposed patent which specifies that movement is not significantly restricted except by friction, because the shield in D1 is bonded to materials on both sides and a strong bonding between the outer core layer and the shield constitutes a fundamental element in the teaching of D1. DIN 57298, Table 26, does not change anything in this context. Even if its content could be considered as an integral part of the disclosure of D1, it would add no information concerning the restriction of the movement caused by the adhesive between the shield and the core or the jacket. The subject-matter of claim 1 of the opposed patent shall therefore be considered to be new (Article 54(1) and (2) EPC).

2.5 It follows from what has been said in the preceding paragraphs that it cannot be considered as obvious to modify the cable disclosed in D1 so as to leave the metal shield free to move without significant restriction except by friction, because the close attachment of the metal shield to the core in D1 is essential to form a moisture barrier at the outer layer of the core. Again, DIN 57298, Table 26, does not add anything of relevance for deciding the issue under consideration since the essential difference between D1 and the opposed patent does not reside in specifying

precise upper and lower limits of the operating temperature range of a specific power cable, but is seen in the manner in which the metal shield is arranged between the adjacent layers so as to allow freedom of movement to react to pressure from the expanding core or the contracting jacket.

- 2.6 In the Board's judgment, E1 constitutes a less suitable starting point for attacking inventive step of present claim 1. Since the appellant opponent has withdrawn the objection of lack of inventive step based on E1 and E2 in the oral proceedings, the Board does not wish to add any further comments on this point.
- 2.7 The subject-matter of claim 1 and that of claims 2 to 15, which are dependent on claim 1, shall therefore be considered as involving an inventive step in the meaning of Article 56 EPC.

### Order

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

1. The appeal is admissible.
2. The appeal is dismissed.

The Registrar:



D. Sauter

The Chairman:



W. J. L. Wheeler

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