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**Datasheet for the decision  
of 1 December 2023**

**Case Number:** T 0658/21 - 3.3.03

**Application Number:** 11806708.1

**Publication Number:** 2594610

**IPC:** C08L81/06, B32B27/00, C08J5/18,  
C08L77/00, H01B3/30, H01B3/42

**Language of the proceedings:** EN

**Title of invention:**  
ELECTRICALLY INSULATING RESIN COMPOSITION, AND LAMINATE SHEET

**Patent Proprietors:**  
Nitto Shinko Corporation  
Nitto Denko Corporation

**Opponent:**  
BASF SE

**Relevant legal provisions:**  
RPBA 2020 Art. 12(4), 12(6)  
EPC Art. 56

**Keyword:**

Amendment to case - document submitted in appeal admitted  
(yes)

Inventive step - main request and first auxiliary request (no)

Late-filed facts - circumstances of appeal case justify  
admittance of the second auxiliary request (no)



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Case Number: T 0658/21 - 3.3.03

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.03**  
**of 1 December 2023**

**Appellant:** Nitto Shinko Corporation  
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**Decision under appeal:** **Decision of the Opposition Division of the  
European Patent Office posted on 17 March 2021  
revoking European patent No. 2594610 pursuant to  
Article 101(3) (b) EPC.**

**Composition of the Board:**

**Chairman**            D. Semino  
**Members:**            D. Marquis  
                              W. Ungler

## **Summary of Facts and Submissions**

- I. The appeal lies against the decision of the opposition division concerning the revocation of European patent No. 2 594 610.
- II. The decision under appeal was based on the main request filed during the oral proceedings on 13 January 2021 and on an auxiliary request filed with letter of 24 February 2020.

Claims 1 and 7 of the main request read as follows:

"1. Use of an electrically insulating resin composition for electrical insulation, wherein the resin composition comprises a polyether polyphenylsulfone resin including a plurality of sulfonyl groups, a plurality of ether bonds and a plurality of aromatic hydrocarbons in a molecule, and a semi-aromatic polyamide resin prepared by polymerizing an aliphatic diamine with an aromatic dicarboxylic acid, wherein a proportion of the semi-aromatic polyamide resin is 1 to 45% by mass".

"7. A laminate sheet obtained by bonding a plurality of sheet materials with a resin composition layer interposed between the sheet materials, wherein the resin composition is an electrically insulating resin composition comprising a polyether polyphenylsulfone resin including a plurality of sulfonyl groups, a plurality of ether bonds and a plurality of aromatic hydrocarbons in a molecule, and a semi-aromatic polyamide resin prepared by polymerizing an aliphatic diamine with an aromatic dicarboxylic acid, wherein a

proportion of the semi-aromatic polyamide resin is 1 to 45% by mass".

Claim 1 of the auxiliary request was identical to claim 7 of the main request.

III. As far as it is relevant to the present appeal, the decision of the opposition division can be summarized as follows:

- The main request found a basis in the application as filed. The subject-matter of claims 1 and 7 of the main request was novel over D1 (EP 0 477 757 A2) and D2 (EP 0 522 307 A2).
- D14 (EP 0 949 634 A1) was the closest prior art. The difference between the subject-matter of claim 1 and example 2 of D14 was that the resin used in claim 1 comprised a semi-aromatic polyamide resin prepared by polymerizing an aliphatic diamine with an aromatic dicarboxylic acid. Considering the experimental reports D24 (Additional Experimental Evidence, dated 11 November 2020) and D27 (Experimental evidence "Experimentelle Daten" filed by the opponent with letter of 8 January 2021) it was concluded that there was no effect over the whole scope of claim 1. The problem was to provide an alternative resin for electrical insulation. D14 already taught the use of a semi-aromatic polyamide resin in order to solve that problem. Claim 1 therefore lacked an inventive step over example 2 of D14. The same conclusion was reached starting from claim 6 of D14 as dependent on claim 1 thereof as the closest prior art.

- The claims of the auxiliary request found a basis in the application as filed. The subject-matter of claim 1 of that request was novel over D1 and D2 but did not involve an inventive step over the closest prior art D14.

IV. The patent proprietors (appellants) lodged an appeal against the decision of the opposition division and submitted among others a second auxiliary request with the statement of grounds of appeal.

Claim 1 of the second auxiliary request corresponded to claim 1 of the auxiliary request in opposition to which the following was added at the end of the claim:  
"wherein the sheet material is any one of a paper produced by a wet papermaking method, a wholly aromatic polyamide paper comprising a wholly aromatic polyamide fiber, and a non-woven fabric".

V. The opponent (respondent) submitted among others document D30 (Falbe J. et al., Römpp Chemie Lexikon, volume 5, page 3572, Stuttgart 1995) with the reply to the statement of grounds of appeal.

VI. The parties were summoned to oral proceedings and a communication pursuant to Article 15(1) RPBA 2020 indicating specific issues to be discussed at the oral proceedings was sent to the parties.

VII. Oral proceedings were held on 1 December 2023 in the presence of both parties.

VIII. The final requests of the parties were as follows:

- (a) The appellants requested that the decision of the opposition division be set aside and that the

patent be maintained on the basis of the main request or the auxiliary request (in the following "first auxiliary request") on which the decision under appeal was based or on the basis of the second auxiliary request filed with the statement of grounds of appeal.

(b) The respondent requested that the appeal be dismissed.

IX. The appellants' arguments, in so far as they are pertinent, may be derived from the reasons for the decision below. They are essentially as follows:

- D30 was late filed and should not be admitted into the proceedings.
- The subject-matter of claim 1 of the main request involved an inventive step starting from claim 6 of D14 dependent on claim 1 thereof as the closest prior art. D24 in particular showed that sheets of material based on a composition containing an aliphatic polyamide could not be reliably prepared.
- The subject-matter of claim 1 of the first auxiliary request concerned a laminate sheet comprising at least two sheet materials and involved an inventive step over D14.
- The second auxiliary request was submitted in appeal in reaction to comments made by the opposition division on the day of the oral proceedings. The second auxiliary request should therefore be admitted into the proceedings.

- X. The respondent's arguments, in so far as they are pertinent, may be derived from the reasons for the decision below. They are essentially as follows:
- D30 represented the common general knowledge of the skilled person showing that polysulfones and their properties were known in the art. D30 should be admitted into the proceedings.
  - Claim 1 of the main request lacked an inventive step starting from claim 6 of D14 dependent on claim 1 thereof as the closest prior art. D24 did not contain information that would allow the skilled reader to understand why materials based on an aliphatic polyamide could not be prepared. D27 showed that such materials could be obtained.
  - Claim 1 of the first auxiliary request lacked an inventive step over D14 for the same reasons as claim 1 of the main request.
  - The second auxiliary request could have been filed during the opposition proceedings. That request was later filed and there was no justification for filing it only in appeal. The second auxiliary request should therefore not be admitted into the proceedings.

### **Reasons for the Decision**

1. Admittance of D30
  - 1.1 D30 was submitted by the respondent with their rejoinder (page 5 of the rejoinder). The document is cited as general knowledge about the use of polysulfones as electrically insulating compositions in

the context of the objection of lack of novelty over D1 and D2 (Pages 7-12 and 15 of the rejoinder).

- 1.2 The respondent maintained that D30 should not be admitted into the proceedings on the grounds that it could have been filed earlier during the opposition proceedings. Since D30 however was only cited as a general document representing the common general knowledge of the skilled person and was apparently provided in reaction to the decision under appeal concluding that the documents that had been submitted by the opponent up to that point lacked relevance (points 21.2, 21.3, 21.6 and 21.7 of the decision), the Board finds it appropriate to exercise its discretion under Article 12(4) RPBA 2020 by admitting D30 into the proceedings.

Main request

2. Inventive step

- 2.1 The contested decision on inventive step is based on D14 as the document representing the closest prior art. D14 was also discussed by both parties in appeal as the closest prior art. It is a document concerning the preparation of electrically insulating layers made of electrically insulating compositions for excellent heat resistance and electrical insulation (Claim 1, paragraph 1 of D14). D14 is therefore in the same technical field as the patent in suit and is concerned with the same purpose (patent in suit, paragraph 14). In view of this, the Board does not see any reason to deviate from the choice of D14 as the document representing the closest prior art.

2.2 The appellants considered that the disclosure of claim 6 dependent on claim 1 was the most relevant starting point within D14. That was not disputed by the respondent. Both parties also stated at the oral proceedings before the Board that they did not rely any longer on any of the further evidence filed in appeal for the question of inventive step starting from claim 6 of D14 (including evidence related to the repetition of part of the experiments carried out and discussed in D24 provided on page 6 of the statement of grounds of appeal). The Board agrees with the position of the parties and has no reason to consider a different starting point.

2.3 Claim 1 of D14 concerns a multilayer insulated wire comprising among others at least one insulating layer comprising 100 parts by weight of a resin (A), of at least one selected from the group consisting of polyetherimide resins and **polyethersulfone resins, 10 parts by weight or more of a resin (B)**, of at least one selected from the group consisting of **polycarbonate resins, polyarylate resins, polyester resins, and polyamide resin**, and 15 to 200 parts by weight of an inorganic filler (C) (emphasis added by the Board).

2.4 Claim 6 dependent on claim 1 sets out that the resin (A) is a polyethersulfone resin and it was not disputed that that resin corresponded to a polyether polyphenylsulfone as defined in claim 1 of the main request. Claim 6 therefore already discloses the combination of polyethersulfone as resin (A) and a generic polyamide as resin (B) in an amount of 10 wt.-% or more. The appellants identified the distinguishing feature over claim 6 of D14 as being the selection of semi-aromatic polyamides as resin (B) (statement of grounds of appeal, page 3, penultimate paragraph). That

analysis to which the Board agrees was not in dispute in appeal.

- 2.5 The appellants argued that the effect of the distinguishing feature was the provision of an electrically insulating resin with excellent tracking resistance in combination with excellent heat resistance (statement of grounds of appeal, page 3). As evidence the appellants referred to the examples of the patent in suit and to the additional report D24.
- 2.6 The presence of excellent heat resistance in electrically insulating compositions is already disclosed in D14 (paragraph 1). In view of this the compositions based on two resins disclosed in D14 are already understood as providing that effect by the skilled reader of D14. In order to properly formulate the technical problem, the relevant question is therefore whether the compositions according to claim 1 of the main request provide an improvement with respect to D14 by means of the selection of the specific polyamide. As to that question, it is established case law of the Boards that if the patent proprietor alleges the fact that the claimed invention improves a technical effect, then the burden of proof for that fact rests upon them and that in the absence of any data confirming the alleged improvement, such an effect cannot be taken into account in the formulation of the technical problem (Case Law of the Boards of Appeal, 10th Edition 2022, I.D.4.3.1).
- 2.6.1 The patent in suit contains examples and comparative examples based on compositions of polyethersulfone (PES) and semi-aromatic polyamide (PA) in varying amounts compared to compositions comprising only one resin (PES or polyethylene naphthalate PEN or

polyphenylene sulfide PPS). The patent in suit does not show compositions representing the subject matter of claim 6 of D14 in which a combination of a polyethersulfone and a polyamide was used. It follows that the patent in suit cannot show that any alleged effect can be attributed to the distinguishing feature over the composition of claim 6 of D14.

2.6.2 D24 contains additional experimental evidence which is reported in Table 1A on page 4 of that document. Table 1A of D24 shows compositions based on a polyethersulfone and a semi-aromatic polyamide in amounts that are according to claim 1 of the main request (PES/PA9T 80/20 and PES/PA6T 80/20) and compositions containing a polyethersulfone and an aliphatic polyamide (PES/PA46 80/20 and PES/PA66 80/20 in Experiments 3 and 4). Experiment 5 is not relevant to D14 since it involves a resin (phenoxy resin) that is not used in D14 (see claim 1).

2.6.3 It is apparent from D24 that there were difficulties in the preparation of sheet bodies according to experiments 3 and 4 comprising an aliphatic polyamide resin (PA46 or PA66) as Table 1A indicates that their preparation failed. D24 is, however, unclear as to why these sheet bodies could not be prepared. It is first disclosed that the sheet bodies could not be obtained (page 4, penultimate paragraph), but that statement appears to be contradicted by the next sentence implying that "if a sheet body was produced", it exhibited insufficient long-term heat resistance. The Board finds that these statements cast doubts as to what was actually done and as to what can be concluded from the data presented in D24.

2.6.4 By contrast, D27 from the respondent shows that the preparation of sheet bodies of compositions of polyether polyphenylsulfone and aliphatic polyamide PA46 was possible and that the mechanical properties measured for these samples were at least as good as for compositions based on polyether polyphenylsulfones and semi-aromatic polyamides (PT-PA 4) obtained under comparable conditions. In view of the evidence provided in D27 and the lack of reliable evidence regarding the purposive selection of semi-aromatic polyamide resins in polyether polyphenylsulfone compositions reported in D24, the Board finds that it cannot be concluded that the compositions according to claim 1 of the main request result in an improvement of properties over D14.

2.7 It follows that the technical problem is to be formulated as the provision of a use of an alternative resin for electrical insulation.

2.8 It remains to be determined whether the subject matter of claim 1 of the main request was obvious when starting from claim 6 of D14 and aiming at solving the posed problem.

2.8.1 Among the resins that can be used as resin (B) in the compositions of D14 the description discloses in paragraph 32 a list of polyamide resins including Nylon 6,T which is a known semi-aromatic polyamide resin. The same polyamide is also used as resin (B) in the electrically insulating composition and laminate of example 3 of D14, albeit in combination with a polyetherimide resin PEI as resin (A) instead of a polyether polyphenylsulfones PES. While Nylon 6,T is not disclosed in combination with a polyether polyphenylsulfone in D14, the Board nevertheless finds

that the description (paragraph 32) and the examples of D14 suggest its possible use as resin (B) in an insulating layer according to claim 6 of D14 when looking for an alternative resin to use.

2.9 Claim 1 of the main request sets out that the proportion of the semi-aromatic polyamide resin in the composition is 1 to 45 % by mass. The amount of resin (B) in the compositions defined in claim 1 of D14 is 10 parts by weight or more. That range of amounts is applicable to Nylon 6,T considered as one of the polyamides that can be used as resin (B) in D14 and it overlaps with the range defined in claim 1 of the patent in suit. It follows that the use of Nylon 6,T in an amount according to claim 1 of the main request was already encompassed by the teaching of D14.

2.10 Besides, D2 confirms, as argued by the respondent in their reply to the statement of grounds of appeal (passage bridging pages 16 and 17), that compositions of polyether polyphenylsulfones with semi-aromatic polyamides display reasonable mechanical properties (for instance example 2 of D2).

2.11 The Board comes therefore to the conclusion that the subject matter of claim 1 of the main request lacks an inventive step over D14.

First auxiliary request

3. Inventive step

3.1 Claim 1 of the first auxiliary request concerns a laminate sheet obtained by bonding a plurality of sheet materials with a resin composition layer interposed between the sheet materials wherein the resin

composition is the same as the one defined in claim 1 of the main request.

- 3.2 The opposition division came to the conclusion that claim 1 of the auxiliary request (corresponding to claim 1 of the present first auxiliary request) lacked an inventive step over claim 6 of D14 for the same reasons as outlined for claim 1 of the main request (point 30.1 of the decision). The opposition division in particular considered that claim 1 of the first auxiliary request only differed from claim 6 of D14 in the presence of a semi-aromatic polyamide and that the problem and solution approach set out in the decision under appeal for claim 1 of the main request also applied to claim 1 of the auxiliary request.
- 3.3 The appellants argued in appeal that the subject matter of the first auxiliary request differed even further from the closest prior art (statement of grounds of appeal, page 7, fifth paragraph) without, however, providing a further detailed reasoning as to which further distinguishing feature(s) should be considered over claim 6 of D14 and how these alleged distinguishing feature(s) rendered the subject matter of operative claim 1 inventive over the closest prior art. Besides, the argument of the appellants laid out on pages 7 and 8 of the statement of grounds of appeal relies on the assumption that the operative claim 1 concerns multilayer structures comprising a resin composition interposed between a paper, a wholly aromatic polyamide paper and a non-woven fabric which is not the case for claim 1 of the first auxiliary request. It is additionally argued that the teaching of D14 would be limited to multilayer extrusion structures. These structures are, however, not excluded from claim 1 of the first auxiliary request so that the

teaching of D14 relating to multilayer extrusion structures is still relevant for claim 1 of the first auxiliary request. Also, the possibility of envisaging other multilayer structures within claim 1 of the first auxiliary request by comparison to D14 does not disqualify the teaching of D14 when it concerns multilayer extrusion structures.

3.4 In the absence of a further distinguishing feature and of an effect for the subject matter of claim 1 of the first auxiliary request, the Board can only conclude that the reasoning and the conclusion outlined for claim 1 of the main request in view of claim 6 of D14 remain valid as set out in the decision under appeal (point 30.1 of the decision).

3.5 In this respect claim 6 of D14 already discloses in view of its dependence on claim 1 a **multilayer** insulated wire comprising a conductor and solderable extrusion-insulating **layers** made up of **two or more layers for covering the conductor**, wherein **at least one insulating layer is formed by a mixture** that meets the definition of claim 6. The presence of an insulating layer made of that mixture interposed between the sheet materials is therefore already encompassed in claim 6 of D14. On that basis, the Board does not see any reason to deviate from the reasoning and conclusion of the opposition division on inventive step for the first auxiliary request. Claim 1 of the first auxiliary request therefore lacks an inventive step starting from claim 6 of D14.

## Second auxiliary request

### 4. Admittance

4.1 The second auxiliary request was first filed with the statement of grounds of appeal. While the admittance of the second auxiliary request is requested on the grounds that that request would not give rise to any novel evaluation of the question of patentability, the appellants do not make it clear why that request was first filed in appeal and not in the opposition proceedings in spite of a negative decision on all the outstanding requests.

4.2 The appellants argued in their letter of 31 March 2022 that the second auxiliary request was filed as a direct response to the comments provided by the opposition division at the oral proceedings (page 2, first paragraph of the letter). The appellant, however, did not point to any specific comment made by the opposition division at the oral proceedings that could justify the admittance of the second auxiliary request in appeal.

4.3 The preliminary opinion of the opposition division on inventive step over D14 in the summons to oral proceedings was already negative for the patent proprietors. The Board does not find any new element during the oral proceedings that would have changed the reasoning of the opposition division to such an extent that it would justify the filing of a further auxiliary request in reaction to that element. Moreover, the Board does not see how the second auxiliary request could lead to a different conclusion (in particular on inventive step) if it does not give rise to any novel evaluation of patentability, as submitted by the

appellants. In view of this, the Board does not find that the circumstances of the case justify the admittance of the second auxiliary request in the appeal proceedings at this stage (Article 12(6) RPBA 2020). The second auxiliary request is therefore not admitted into the proceedings.

**Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:



D. Hampe

D. Semino

Decision electronically authenticated