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**Datasheet for the decision  
of 19 November 2019**

**Case Number:** T 0423/16 - 3.3.09

**Application Number:** 10187787.6

**Publication Number:** 2441813

**IPC:** C09J7/04, D03D13/00, D03D15/00

**Language of the proceedings:** EN

**Title of invention:**  
High abrasion resistance tape

**Patent Proprietor:**  
Plasto Technologies

**Opponent:**  
tesa SE

**Headword:**

**Relevant legal provisions:**  
EPC Art. 100(b), 54, 54(3), 56

**Keyword:**  
Sufficiency of disclosure - (yes)  
Novelty - main request (yes)  
Inventive step - main request (yes)



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Case Number: T 0423/16 - 3.3.09

**D E C I S I O N**  
**of Technical Board of Appeal 3.3.09**  
**of 19 November 2019**

**Appellant:** tesa SE  
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**Decision under appeal:** **Decision of the Opposition Division of the European Patent Office posted on 18 December 2015 rejecting the opposition filed against European patent No. 2441813 pursuant to Article 101(2) EPC.**

**Composition of the Board:**

**Chairman** N. Perakis  
**Members:** F. Rinaldi  
E. Kossonakou

## Summary of Facts and Submissions

I. This decision concerns the appeal filed by the opponent against the decision of the opposition division to reject the opposition against European patent No. 2 441 813 B1.

II. In its notice of opposition, the opponent had requested the revocation of the patent in its entirety based on Article 100(a) (lack of novelty and lack of inventive step) and 100(b) EPC.

III. The documents cited during opposition proceedings included:

- D3: EP 2 045 303 A1
- D4: EP 2 000 516 A1
- D6: EP 1 607 459 A1
- D7: EP 2 298 845 A1
- D8: A. Hofer, "Stoffe", 7th edn, Frankfurt am Main, 1994, 182-189
- D10: N. Gokarneshan, "Fabric - Structure and Design", New Delhi, 2004, page 28-30
- D14: Excerpt from "Römpf-Online": "Spinnfaser", last update May 2005 (available from: [www.roemmp.com](http://www.roemmp.com))
- D18: M. Humphries, "Fabric Reference", 4th edn, Upper Saddle River, 2009, 14-26 and 91-102
- D20: N. Özdil et al., "Analysis of Abrasion Characteristics" in "Textiles, Abrasion Resistance of Materials", Dr. Marcin Adamiak (editor), InTechOpen, 2012, 119-146 (available from: <https://www.intechopen.com/books/>)

abrasion-resistance-of-materials/analysis-of-  
abrasion-characteristics-in-textiles).

IV. In opposition proceedings, the patent proprietor's main request was for maintenance of the patent on the basis of the granted claims, claim 1 of which read:

"An abrasion resistant adhesive tape, in particular for sheathing elongate material such as more particularly lead or cable looms, comprising at least a strip type substrate (1), at least one self sticking adhesive layer (2) consisting of a pressure sensitive adhesive on at least one side of said substrate (1) and, accessorially, a covering (3) extending in the longitudinal direction of the adhesive tape and covering partially or totally said adhesive layer (2), characterized in that the strip type substrate (1) consists in a satin fabric having a repeat greater than 2 and a step number greater than or equal to 1, said satin fabric comprising warp (10) and weft (11) threads made from synthetic spun yarns."

Claims 2 to 13 were dependent on claim 1.

V. The opposition division decided that the ground of Article 100(b) EPC did not prejudice the maintenance of the patent and that the subject-matter claimed was novel and inventive over the cited prior art.

VI. The opponent (appellant) appealed the decision of the opposition division and requested that the decision be set aside and the patent be revoked.

VII. The patent proprietor (respondent) requested that the appeal be dismissed and that an apportionment of costs be ordered when the decision becomes final.

Alternatively, it requested that the patent be maintained on the basis of the claims of auxiliary requests 1 to 3, all filed with the reply to the statement setting out the grounds of appeal dated 13 September 2016. Moreover, it filed the following document:

D23: Satin construction patterns.

- VIII. The board summoned the parties to oral proceedings and issued a communication setting out its preliminary opinion on the outstanding issues.
- IX. By letter dated 16 October 2019, the appellant further elaborated on its arguments.
- X. On 19 November 2019, oral proceedings were held before the board. At the oral proceedings, the respondent withdrew its request for the apportionment of costs.
- XI. The appellant's arguments relevant to the present decision may be summarised as follows:

Sufficiency of disclosure: The definition of satin fabric given in granted claim 1 ("having a repeat greater than 2 and a step number greater than or equal to 1") encompassed weave patterns which the skilled person would not have considered to be satin weaves. Thus, they would not have known whether such a fabric fell under the scope of the claims.

Novelty: Documents D3, D4 and D7 disclosed all the features of claim 1 as granted, in particular a satin fabric comprising warp and weft threads made from synthetic spun yarns.

Inventive step: The subject-matter of claim 1 differed from D4, considered the closest prior art, in that synthetic spun yarns were used. The opposed patent did not demonstrate any improvement over the teaching of D4, in any case not over the entire scope of the claimed subject-matter. Moreover, the opposed patent did not contain any evidence showing that a substrate which consisted in a satin fabric or the use of threads made from spun yarn provided an improvement over a substrate in plain weave or the use of threads made from filament yarn. Thus, the only technical problem solved over D4 was the provision of an alternative substrate material for abrasion-resistant adhesive tapes. The use of synthetic spun yarns was suggested in D6 and it would have been obvious to the skilled person to use it in the substrate of D4.

Attacks on inventive step were also developed starting from D6 (statement setting out the grounds of appeal and letter dated 16 October 2019) and from D3 (at the oral proceedings) as the closest prior art.

XII. The respondent's arguments relevant to the present decision may be summarised as follows:

Sufficiency of disclosure: The skilled person would have known that both regular and irregular satin weaves existed and rules for their construction had been set out in D10, cited in the opposed patent. Thus, they would have known how to reproduce the invention.

Novelty: Documents D3 and D4 did not unambiguously disclose a substrate comprising warp and weft threads made from synthetic spun yarn and D7 did not disclose the combination of (i) a substrate consisting of a

satin fabric and (ii) warp and weft threads made from synthetic spun yarns.

Inventive step: D4 was the closest prior art. It did not disclose warp and weft threads made from synthetic spun yarns. The opposed patent showed that the polyester spun yarns woven according to a satin weave provided the unexpected effect of a high abrasion resistance despite the low abrasion resistance of each yarn. The technical problem was to provide an adhesive tape which was more resistant to abrasion and possibly cheaper. No suggestion had been provided in the prior art for its solution.

Moreover, neither D3 nor D6 qualified as the closest prior art.

### **Reasons for the Decision**

1. The patent in suit relates to an abrasion-resistant adhesive tape of moderate cost and suitable for bandaging individual leads to form cable looms with high protection against mechanical damage due to scuffing and rubbing. The abrasion-resistant adhesive tape comprises at least a strip-type substrate and at least one self-sticking adhesive layer consisting of a pressure sensitive adhesive on at least one side of the substrate. The strip-type substrate consists in a satin fabric comprising warp and weft threads made from synthetic spun yarns (paragraph [0021] and claim 1).

2. *Article 100(b) EPC*

2.1 The appellant considered that the definition of satin fabric given in granted claim 1 ("having a repeat greater than 2 and a step number greater than or equal to 1") encompassed weave patterns which the skilled person would not have considered to be satin weaves, on the basis of their general knowledge, as for instance represented by D8. Thus, the skilled person would not have known whether such a fabric fell under the scope of the claims.

2.2 However, the patent in suit includes a description of the construction rules to be used to prepare a satin fabric suitable for the invention (paragraph [0047]). In this section reference is made to D10 which describes regular and irregular satin weaves and sets out the rules for their preparation. In application of these rules, the respondent prepared document D23 in which constructions of satin weaves have been depicted. The skilled person is aware of these rules and they would therefore exclude weave patterns which do not provide a satin fabric.

2.3 Furthermore, as the opposition division explained (Reasons, point 4.2): "When faced with the task of providing a satin weave pattern, thus a weave which does not have a continuous twill line, the skilled person rules out a regular weave with a step number of 1, although falling within the fabric definition in terms of step number provided in claim 1 of the patent in suit. For irregular satin fabrics, a step number of equal to 1 can be adopted (see D10, p. 29, l. 2). In addition, the skilled person is well aware that regular satin weaves with a repeat number of below 5 (D8, p. 183, l. 13-14) and irregular satin weaves with a



repeat number of below 4 do not exist (D10, p. 29, 1. 2). The skilled person would thus not attempt to configure a satin weave with a repeat number of below 4."

2.4 Thus, the ground of Article 100(b) EPC does not prejudice the maintenance of the patent.

### 3. *Novelty*

3.1 The appellant argued that any one of D3, D4 and D7 described all of the features of claim 1. Thus, the subject-matter of this claim lacked novelty.

#### 3.2 Novelty vs. D3

3.2.1 D3 relates to an abrasion-resistant adhesive tape which is useful as a wire-harnessing tape for use in the automotive industry (paragraph [0001]). The tape comprises a woven polyester support (*i.e.* substrate) composed of "polyester fibers and, or, yarns" (paragraph [0011]) and the support is created by using any weave pattern such as plain weave, satin or tweed, plain weave being the most preferred (paragraph [0012]).

3.2.2 However, no direct and unambiguous disclosure of warp and weft threads made from synthetic spun yarns may be derived from D3. Already on this basis, the subject-matter of claim 1 is novel over D3.

3.2.3 The appellant argued that, taking into account the correct nomenclature, the term "polyester fibers and, or, yarns" had to be understood as meaning: polyester staple fibres spun into a yarn (*i.e.* spun yarn) or yarns of endless filaments. Thus, D3 not only disclosed

a satin fabric but also warp and weft threads made from synthetic spun yarns.

Contrary to the appellant's assertions, the term "fibre" does not have an unequivocal and generally accepted single meaning in the art. Reference is made for instance to D18 (page 14) which cites that "(t)extile fibres may be staple or filaments" and "all MF [manufactured] fibres can be staple or filament". Consequently, it cannot be directly and unambiguously deduced that the term "polyester fibers" has the meaning of polyester spun yarn. Furthermore, the appellant's reference to D14 does not assist its case. This document relates to the definition of staple fiber ("Spinnfaser") but it does not allow any conclusion to be drawn regarding the meaning of the term "polyester fibers" in D3.

- 3.2.4 The appellant also argued that the authors of D3 could not have intended the two terms "polyester fibers" and "yarns" in paragraph [0011] to have an identical meaning and concluded that these terms had to be interpreted as denoting two different types of threads.

However, it is not possible to understand from this paragraph whether the authors of D3 applied these two terms with the intention of denoting the two main types of threads known in the art, *i.e.* spun yarns and yarns of endless filaments. The respondent explained conclusively that it is not unusual in a patent specification to use the entire set of known terms applied in a technical area (in the present case the terms relating to threads), without necessarily envisaging to ascribe a different meaning to such known terms.

3.2.5 The appellant also referred to the examples of D3 in which textiles of PET, cotton and acetate were described and argued that since cotton consisted mandatorily of staple fibres, the PET-fibres mentioned in the examples had to be regarded as produced from polyester spun yarns.

However, there is no additional disclosure in D3 supporting the appellant's allegation that all threads used in the examples, in particular that the PET-fibres, are necessarily polyester spun yarns.

3.3 Novelty vs. D4

3.3.1 D4 relates to an adhesive tape, in particular cable sheathing tape for the automotive industry with a strip-shaped woven substrate which is provided on at least one side with a self-sticking adhesive layer (paragraph [0001]).

3.3.2 However, D4 does not directly and unambiguously disclose a substrate comprising warp and weft threads made from synthetic spun yarns. Already on this basis, the subject-matter of claim 1 is novel over D4.

3.3.3 The appellant argued that the use of staple yarns in the warp and weft threads of the woven substrate was disclosed in paragraph [0036] and that the skilled person would have understood the reference to "Fasermischungen" (fibre blends) in this paragraph to describe a spun yarn. Moreover, a satin fabric as a woven substrate was described in paragraph [0040].

However, paragraph [0036] of D4 relates to features which have an impact on the properties and the quality of the fabric of the substrate. The features are, *inter*

*alia*, the thread material ("Fadenmaterial"), the mix of fibres ("Fasermischungen") along with other features such as the type of the thread ("Art des Garns"), including fineness, homogeneity, filament structure. Within this context, there is no direct and unambiguous disclosure in D4 supporting the appellant's argument that the term "Fasermischungen" would be understood by the skilled person to unequivocally mean spun yarn.

### 3.4 Novelty vs. D7

3.4.1 D7 is prior art according to Article 54(3) EPC. This document relates, like the opposed patent, to a highly abrasion-resistant tape, preferably for sheathing elongate material such as leads or cable looms, comprising a substrate to which a pressure-sensitive adhesive coating is applied on at least one side (paragraph [0001]). The substrate is woven and is characterised by polyester threads which are usually woven in plain weave, other weave types being satin weave and twill weave (paragraph [0010]). The threads may consist of spun yarns or filament yarns (paragraph [0011]).

3.4.2 However, the combination of (i) satin fabric with (ii) warp and weft threads made from synthetic spun yarns is not disclosed in D7. Such a combination would require selections from two lists, *i.e.* the selection of satin weave from the first list relating to the possible weaves and the selection of spun yarns from the second list relating to the type of thread.

3.4.3 The appellant also argued that the satin fabric, on the one side, and the warp and weft threads made from synthetic spun yarns, on the other side, were disclosed only in particularly short lists. The appellant thus

concluded that the combination of satin fabric with warp and weft threads had to be regarded as sufficiently individualised ("ausreichend individualisiert").

However, in paragraph [0010] the twill weave is highlighted as potentially advantageous and according to paragraph [0011] filaments yarns are those typically used. Thus, there is no pointer in D7 to select the satin fabric and combine it with warp and weft threads made from synthetic spun yarns.

3.4.4 In view of this, it is not necessary to consider the respondent's additional arguments based on D20.

3.5 To conclude, the subject-matter of claim 1 is novel over D3, D4 and D7 (Article 54 EPC).

#### 4. *Inventive step*

4.1 The closest prior art

4.1.1 Three documents were cited as potential candidates for the closest prior art, namely D3, D4 and D6.

4.1.2 D4, like the patent in suit, relates to abrasion-resistant adhesive tapes having a strip-shaped woven substrate. The abrasion resistance of the adhesive tapes is discussed in paragraphs [0004], [0017] and [0036]. In paragraph [0040] it is mentioned that a satin weave can be used as an alternative to or in combination with a linen weave for the woven substrate and that with such a material an abrasion resistance can be obtained of at least the abrasion class C in accordance with LV 312. Thus, D4 is regarded as the closest prior art.

4.1.3 D3 discloses abrasion-resistant adhesive tapes, the polyester support of which is preferably a plain weave. D3 uses warp and weft threads which are made of yarn but they are not specified as synthetic spun yarns. The disclosure of D3 is not considered to be closer to the subject-matter of claim 1 than D4.

4.1.4 D6 relates to adhesive tapes comprising a strip-shaped textile dyed substrate which is coated on at least one of its two sides with a pressure-sensitive adhesive. The technical problem addressed in D6 is the provision of an adhesive tape exhibiting a reduced self-discoloration and discoloration of the materials to be wrapped (paragraph [0016]). The focus of D6 is not on providing abrasion-resistant adhesive tapes. Thus, D6 does not qualify as the closest prior art.

4.1.5 As already explained in the context of novelty, the subject-matter of claim 1 differs from D4 in that the satin fabric comprises warp and weft threads made from synthetic spun yarns (D4 does not disclose such yarns).

4.2 The technical problem and its solution

4.2.1 The technical problem described in paragraph [0021] of the patent in suit is the provision of an abrasion-resistant adhesive tape "having a moderate cost and which affords the possibility of bandaging individual leads to form cable looms with high protection against mechanical damage due to scuffing and rubbing on sharp edges, burrs or weld spots".

4.2.2 The patent in suit provides the results of an abrasion test carried out on adhesive tapes (paragraphs [0057] to [0059] and table of page 7). The tested tapes

comprise a strip-type substrate consisting of a satin fabric with threads made from polyester spun yarns (paragraph [0050] onwards). The adhesive layer is coated on the right side of the satin fabric (*i.e.* the side having a smooth texture) and/or on the wrong side of the satin fabric (*i.e.* the side having a rough surface of lower degree of smoothness than the right side). According to the results of page 7, at least one of the two sides of the satin fabric provides an abrasion-resistant adhesive tape with an ISO 6722 abrasion class of at least 3.

4.2.3 ISO 6722 is described in the patent in suit (starting on paragraph [0011]) to be an established method for determining the abrasion resistance of adhesive tapes. In this method, the scrape abrasion resistance of adhesive tapes is tested in accordance with German Standard LV 312. The results obtained by these tests are assigned to abrasion classes and the correspondence between the classes established according to ISO 6722 and LV 312 is the following:

Abrasion class - ISO 6722	Abrasion class - LV 312
X	A
1	B
	C
2	D
3	E
4	F

Needless to say, the allocation of classes to the results obtained by the tests allows for a straightforward comparison of the results.

- 4.2.4 Thus, the ISO 6722 abrasion class 3 which is achieved with the adhesive tapes described in the opposed patent corresponds to class E according to LV 312.

The comparison of these results with those described in paragraph [0040] of D4, which have an abrasion of at least class C according to LV 312, allows the conclusion to be drawn that the adhesive tape according to the invention of claim 1 has an improved abrasion resistance, compared to the adhesive tapes of D4.

- 4.2.5 The appellant referred to table 5 of D4 and argued that it concerned adhesive tapes with very light woven substrates (e.g. 127-134 g/m<sup>2</sup>), whereas the substrates tested in the patent in suit and shown in the table on page 7 have heavier woven substrates (starting from 218 g/m<sup>2</sup>). Thus, if the technical problem was the provision of abrasion-resistant adhesive tapes with high protection against mechanical damage, this problem was not solved over the entire scope of claim 1.

However, it cannot be inferred from the tests described in table 5 of D4 that a satin weave or synthetic spun yarns were used. Thus, no conclusion can be drawn on the impact of a further difference, namely the weight of the woven substrate, on the abrasion resistance of the substrate. Furthermore, the appellant has not provided its own tests to corroborate its assertions and invalidate the finding described in the patent in suit, that synthetic spun yarns woven according to a satin weave provide a high abrasion resistance.

- 4.2.6 In view of the available technical evidence, the objective technical problem in view of D4 is the provision of an adhesive tape with improved abrasion resistance.



Thus, the board does not agree with the appellant, who considered that the technical problem was the provision of an alternative substrate material for the abrasion-resistant adhesive tape of D4.

4.3 The issue of obviousness

The question which remains to be answered is whether the skilled person starting from the disclosure of D4 and looking for an adhesive tape with improved abrasion resistance would find in the state of the art the motivation to use a satin fabric the warp and weft threads of which are made from synthetic spun yarns.

4.4 The appellant argued that the skilled person was aware of the fact that synthetic spun yarns were relatively cheap. Furthermore, it argued that it was known from paragraphs [0018] and [0021] of D6 to use synthetic spun yarns for the textile substrate of the pressure-sensitive adhesive tape.

However, the appellant has not referred to any document suggesting that warp and weft threads made from synthetic spun yarns would be suitable for providing a substrate for an abrasion-resistant adhesive tape exhibiting high protection against mechanical damage. No such teaching can be found in the cited prior art and in particular in D6.

4.5 Thus, the subject-matter of claim 1 and of claims 2 to 13 dependent thereon is not obvious to the person skilled in the art (Article 56 EPC).

5. Since the main request is allowable, there is no need to consider the auxiliary requests.

**Order**

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

The appeal is dismissed.

The Registrar:

The Chairman:



D. Magliano

N. Perakis

Decision electronically authenticated