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Datasheet for the decision of 10 June 2025

Case Number: T 1468/23 - 3.3.02

Application Number: 13866368.7

Publication Number: 2937398

IPC: C09K3/14, F16D69/02

Language of the proceedings: EN

Title of invention:
FRICTION MATERIAL

Patent Proprietor:
Akebono Brake Industry Co., Ltd.

Opponent:
VRI-Verband der Reibbelagindustrie e.V.

Relevant legal provisions:
EPC Art. 56
RPBA 2020 Art. 13(2)

Keyword:
Inventive step
Amendments - exceptional circumstance (no)

Decisions cited:
T 0449/23

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Case Number: T 1468/23 - 3.3.02

D E C I S I O N
of Technical Board of Appeal 3.3.02
of 10 June 2025

Appellant: (Opponent)	VRI-Verband der Reibbelagindustrie e.V. Robert-Perthel-Str. 49 50739 Köln (DE)
Representative:	Ipsilon Benelux 76, rue de Merl 2146 Luxembourg (LU)
Respondent: (Patent Proprietor)	Akebono Brake Industry Co., Ltd. 19-5, Nihonbashi Koami-cho Chuo-ku Tokyo 103-8534 (JP)
Representative:	Grünecker Patent- und Rechtsanwälte PartG mbB Leopoldstraße 4 80802 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 30 May 2023 rejecting the opposition filed against European patent No. 2937398 pursuant to Article 101(2) EPC.**

Composition of the Board:

Chairman	M. O. Müller
Members:	P. O'Sullivan
	M. Blasi

Summary of Facts and Submissions

I. The appeal of the opponent (appellant) lies from the decision of the opposition division to reject the opposition against European patent 2 937 398.

II. An opposition was filed on the grounds of Article 100(a) EPC in combination with Article 56 EPC (lack of inventive step) and Article 100(c) EPC.

III. The following document *inter alia* was submitted during opposition proceedings:

D1: US 2010/0084233 A1

IV. In a communication pursuant to Article 15(1) RPBA, the board provided its preliminary considerations.

V. Oral proceedings by videoconference took place as scheduled on 10 June 2025 in the presence of both parties.

VI. Requests

The appellant requested that the contested decision be set aside and that the patent as granted be revoked in its entirety.

The patent proprietor (respondent) requested dismissal of the appeal, implying maintenance of the patent as granted. Alternatively, the respondent requested maintenance of the patent in amended form on the basis of one of the set of claims of auxiliary requests 1 to 4 submitted with the statement of grounds of appeal.

VII. For the relevant party submissions, reference is made to the reasons for the decision set out below.

Reasons for the Decision

Main request (patent as granted)

1. Inventive step - Article 100(a) and Article 56 EPC

The contested patent relates to a friction material for use in brake pads or brake linings, clutches, etc. for motor vehicles, railroad cars, industrial machines, and the like (paragraph [0001]). The object of the patent is to provide a friction material which contains neither any copper component nor metallic fibres and which has stable frictional properties and excellent wear resistance and is less apt to attack mating materials (paragraph [0011]).

1.1 Claim 1 of the main request (patent as granted) reads as follows:

"A friction material containing neither metallic fibers nor copper component, the friction material comprising:

10-35% by volume potassium titanate, wherein the potassium titanate has a three-dimensional shape chosen from the group of boomerang shape, cruciform, amoebiform, parts of various animals or plants, wherein amoebiform means a shape which has a plurality of projections extending in irregular directions;

3-10% by volume abrasive material having a Moh's hardness of 7 or higher; and
10-30% by volume elastomer-modified phenolic resin."

1.2 Closest prior art

1.2.1 Patent document D1 was considered as the closest prior art in the contested decision. That D1 could serve as closest prior art was not contested by the respondent.

1.2.2 D1 discloses a friction material for brake pads for use in brakes of vehicles or industrial machines (D1, paragraph [0001]). The friction material is said to provide the same level of friction, pad life, noise and other performance characteristics, while employing neither copper nor copper-containing materials (D1, paragraph [0003]).

1.2.3 According to paragraph [0004] of D1, the friction material comprises *inter alia* 12-24% by volume binder, 15-30% by volume of at least one abrasive, and 10-24% by volume of a least one titanate. The titanate may be potassium titanate (paragraph [0019]).

1.2.4 The 12-24 vol.% binder in D1 may comprise a mixture of one or more straight or modified phenolic resin systems (paragraph [0004]). Examples of modified binders include *inter alia* nitrile (paragraph [0015]). It was undisputed by the respondent that this corresponded to an elastomer-modified phenolic resin, present within the percentage volume range required by claim 1.

1.2.5 Hence, D1 discloses a friction material comprising both potassium titanate and an elastomer-modified phenolic resin as defined and within the amount ranges stipulated in claim 1.

1.2.6 In relation to the abrasive material of contested claim 1, paragraph [0018] of D1 discloses that at least one

abrasive makes up approximately 15-30% by volume of the total friction material composition, thus lying above the volume range for the abrasive material of 3-10% required by claim 1.

1.2.7 Claim 1 also requires that the abrasive material has a Moh's hardness of 7 or higher. Paragraph [0018] of D1 refers to abrasive materials as typically being classified by a Moh's hardness value, and provides a list of materials, including those materials exemplified in the patent (paragraph [0027]) as having a Moh's hardness of 7 or higher as required by claim 1, i.e. alumina, silica, silicon carbide, mullite and zirconium silicate. It is also stated in paragraph [0014] that the hard abrasives (i.e. those with higher Moh's hardness values) should be used in low concentrations, while the mild abrasives (those with lower Moh's hardness values) may be used in higher concentrations to achieve the same desired friction level.

1.3 Distinguishing feature

1.3.1 Both parties accept, in line with the contested decision, that claim 1 is distinguished from D1 in the feature whereby the friction material comprised 3-10% by volume abrasive material having a Moh's hardness of 7 or higher, while D1 requires 15-30% by volume, and lists various materials from which a selection is needed to arrive at materials having the claimed Moh's hardness (paragraphs [0004] and [0018] addressed above).

1.3.2 The board notes in this regard that although the respondent stated that claim 1 was distinguished from D1 "at least" with respect to this feature, implying

that there may be further distinguishing features, it neither identified such further features, nor relied thereon in relation to inventive step.

1.4 Objective technical problem

1.4.1 In relation to the technical effect of the distinguishing feature, the respondent referred to paragraph [0022] of the application as filed (paragraph [0033] of the patent), which states that using a content of 3 to 10% by volume of an abrasive material having a Moh's hardness of 7 or higher leads to an improved friction coefficient during high-speed high-load braking and reduced attacking against mating materials.

1.4.2 The respondent also compared the results obtained for examples 1 to 11 (patent and application as filed, table 1) with those obtained for comparative examples 1 to 6. Specifically:

- examples 1 to 11 demonstrated performance equal to that of comparative example 2, which contained copper fibres and a straight phenolic resin (i.e. not elastomer-modified as required by claim 1) outside the scope of claim 1, in terms of frictional property, wear resistance and attacking against mating materials,
- comparative example 4 using only 2% by volume abrasive material (i.e. below the lower limit of 3% by volume in claim 1) showed low effectiveness under high load and high friction at low temperatures (potentially causing noise) compared to examples 1 to 11, and
- comparative example 6 employing an abrasive material having a Moh's hardness of less than 7

(iron oxide) (claim 1: 7 or higher) showed poor performance in terms of frictional properties, wear resistance and the property of attacking mating material compared to examples 1 to 11.

1.4.3 In line with the view of the opposition division according to the contested decision, the respondent thus formulated the objective technical problem as the provision of a friction material with improved friction coefficient during high-speed high-load braking and reduced attacking against mating materials.

1.4.4 The board disagrees with this formulation of the objective technical problem. As argued by the appellant, none of the comparative examples in table 1 comprise an amount of abrasive material above the upper limit of claim 1, let alone within the range of 15-30 vol.% required according to D1. Indeed, none of the comparative examples, with the exception of comparative example 2 which has lower than the claimed amount, comprise an amount of abrasive material outside the volume percentage range stipulated in claim 1.

1.4.5 The board notes additionally that with the exception of comparative example 6, all comparative examples comprise abrasive material meeting the Moh's hardness requirement of claim 1. In relation to comparative example 6, although the Moh's hardness of 7 or higher stipulated in claim 1 is not met, the amount of abrasive material (iron oxide) is 6% by volume, which is also not representative of the disclosure of D1.

1.4.6 Hence at least for these reasons, the comparative examples in the patent are not representative of the disclosure of D1, and are thus not suitable as evidence of a technical effect, specifically an improved

friction coefficient and/or reduced attacking against materials, linked to the distinguishing feature over D1.

1.4.7 During oral proceedings the respondent submitted that even if the objective technical problem as formulated above were not accepted, the examples of the patent demonstrated that the claimed friction materials represented a working alternative to the materials of D1. Specifically, comparative example 2 of the patent, which represented the gold standard for friction materials in the field, differed from examples 1 to 11 in that the binder was a straight phenolic resin and thus not a binder as defined in claim 1, and crucially also in that it comprised copper fibres, which were excluded from the friction materials of claim 1 (see patent, table 1, page 9). Comparison of the properties of the composition of comparative example 2 with those of examples 1 to 11 demonstrated that the latter achieved similar frictional properties, wear resistance and attacking against mating material (patent, table 1, page 10). Hence, it had been demonstrated that the friction materials of the examples of the patent according to claim 1 were as good as the gold standard in the field, and hence represented a working alternative to the friction materials disclosed in D1.

1.4.8 The board agrees and hence formulates the objective technical problem underlying claim 1 in line with the respondent's proposal, namely as the provision of a working alternative friction material to that of D1.

1.4.9 This formulation of the objective technical problem warrants some explanation. In the present situation, while the comparison of the examples of the patent and comparative example 2 set out above demonstrates that

the claimed friction materials are working alternatives to those of D1, the comparison relates to a composition which is not representative of D1, and in particular does not differ from the claimed subject-matter in the distinguishing feature set out above. Hence, there is no evidence that the compositions of examples 1 to 11 of the patent display comparable properties to the compositions of D1. The provision of a "working alternative" to the friction material of D1 in the context of the above objective technical problem is therefore not to be understood as the provision of an equally effective alternative abrasive material to that of D1.

1.4.10 Rather, this objective technical problem sets a lower bar - in particular, its solution simply requires that the claimed compositions are suitable as friction materials.

1.4.11 If in contrast the respondent had wished to argue that the claimed friction materials were (unexpectedly, in view of D1) not negatively impacted by the reduction in the amount of abrasive material, it would have been for the respondent to demonstrate this effect.

1.4.12 This situation is not different to that in which a patent proprietor alleges an improvement over the closest prior art. To be relied upon for inventive step, the patent proprietor must demonstrate that such improvement is either credible on the basis of the common general knowledge, or demonstrated with appropriate evidence (see e.g. T 449/23, reasons for the decision, 2.5.6 d)). In the present case, on the basis of the teaching in D1, the skilled person would have expected a reduction in the amount of abrasive material below 15 vol. % to negatively impact the

friction performance of the formulation (D1, paragraph [0039]). Hence, if the teaching of D1 were found to be incorrect or unfounded, this finding should be supported by appropriate evidence.

1.4.13 However, as stated in the board's communication pursuant to Article 15(1) RPBA, and addressed at oral proceedings before the board, in view of the lack of comparative examples representative of D1 as set out above, the allegation that the claimed friction materials are equal to those of D1 in terms of performance, contrary to what the skilled person would have expected on the basis of paragraph [0039] of D1, is not supported by any evidence. Hence the objective technical problem remains less ambitious as formulated above.

1.5 Obviousness

1.5.1 The respondent argued that the claimed solution to this problem was not obvious in view of D1 because D1 taught against lowering the amount of abrasive material to a level below 15 vol.%. Specifically, in relation to example 8 of D1 in which 15 vol.% abrasive was provided, paragraph [0039] taught that further lowering (i.e. below 15 vol.%) of the abrasive level would negatively impact the friction performance of the formulation, and that therefore the total amount of abrasives should at least be greater than 15 vol.%. Furthermore, when the amount of abrasive material in D1 was at its lowest, namely 15 vol.% in example 8, the friction performance was less favourable: it was stated in relation to example 8 that the "friction performance characteristic was marginally acceptable in this case, suggesting lowering of the abrasive level further would negatively impact the friction performance of the

formulation" (D1, paragraph [0039]. Hence, seeking a working alternative friction material, there was no teaching or motivation in D1 to lower the amount of abrasive material to within the claimed range of 3-10%.

1.5.2 The board does not find this argument convincing. As argued by the appellant, D1 does not teach that a working alternative friction material would not be obtained by lowering the amount of abrasive material present in the composition of D1. Rather, D1 merely teaches that lowering the amount of abrasive will negatively affect the frictional properties. As set out above, achieving similar properties to the compositions of D1 is not required in order to solve the objective technical problem formulated above. Hence, as stated by the appellant, the teaching in D1 that lowering the amount of abrasive material would negatively impact performance would not have dissuaded the skilled person from employing less abrasive material than disclosed in D1, namely within the claimed range of 3-10 vol.%, while at the same time accepting a reduction in performance. Thereby the skilled person starting at D1 and seeking to solve the above objective technical problem would have arrived at the subject-matter of claim 1.

1.5.3 Consequently, the ground for opposition under Article 100(a) EPC in combination with Article 56 EPC prejudices maintenance of the patent as granted.

Auxiliary request 1

2. Claim 1 of auxiliary request 1 differs from claim 1 of the main request in the definition of the potassium titanate component, which reads as follows (addition

and deletion compared to claim 1 of the main request in bold text and strike through respectively):

"*10-35% by volume potassium titanate* ***having a plurality of protrudent shapes,*** *wherein the* ***particles of the*** *potassium titanate* ~~*has*~~ ***have*** *a three-dimensional shape* ***which has a plurality of protrusions, and where the three dimensional shape is*** *chosen from the group of boomerang shape, cruciform, amoebiform, parts of various animals or plants, wherein amoebiform means a shape which has a plurality of projections extending in irregular directions*"

2.1 Inventive step - Article 56 EPC

The set of claims of auxiliary request 1 was submitted by the respondent to overcome objections in relation to added subject-matter (reply to the statement of grounds of appeal, pages 7 and 8). In relation to inventive step, the respondent merely stated in writing that the same applied as for the main request.

During oral proceedings the board stated that the same reasoning as regards inventive step for claim 1 of the main request seemed to apply to claim 1 of auxiliary request 1. Since the respondent in reply offered no defence of auxiliary request 1 in this regard, for the same reasons as provided above for claim 1 of the main request, the subject-matter of claim 1 of auxiliary request 1 lacks inventive step pursuant to Article 56 EPC.

Auxiliary request 2

3. The set of claims of auxiliary request 2 was submitted with the reply to the statement of grounds and is

identical to auxiliary request 2a submitted during opposition proceedings.

4. Claim 1 of auxiliary request 2 is identical to claim 1 of auxiliary request 1 with the addition of the following text:

"*wherein the friction material further comprises a fibrous base material selected from bio-soluble inorganic fibres having a diameter of from 0.1 to 10 µm and a length of 1 to 1,000 µm*"

4.1 Amendments - Article 123(2) EPC

According to the respondent, the added text in claim 1 found basis in paragraphs [0025], [0026] and [0029] of the application as filed. The appellant had no objection under Article 123(2) EPC, and the board agrees that claim 1 meets the requirements of Article 123(2) EPC.

4.2 Clarity - Article 84 EPC

The appellant submitted that claim 1 of auxiliary request 2 lacked clarity under Article 84 EPC in view of the term "bio-soluble inorganic fibers", which was not present in the granted claims.

It was undisputed that this objection was raised for the first time during oral proceedings before the board when auxiliary request 2 was addressed. Hence, Article 13(2) RPBA applies to the issue of admittance thereof into proceedings.

According to Article 13(2) RPBA, any amendment to a party's appeal case made after notification of a

communication under Article 15(1) RPBA shall, in principle, not be taken into account unless there are exceptional circumstances, which have been justified with cogent reasons by the party concerned.

As justification for admittance of the objection, the appellant submitted that auxiliary request 2 had not been discussed during opposition proceedings.

The board does not find this justification convincing. Not being discussed in opposition proceedings does not constitute an exceptional circumstance justifying admittance under Article 13(2) RPBA. As stated by the respondent, the set of claims of auxiliary request 2 was (re)filed with the reply to the statement of grounds of appeal, and any objections in relation to this request should have been submitted at the latest in reply to this submission, but well in advance of the issuance of the board's communication pursuant to Article 15(1) RPBA, let alone in advance of oral proceedings before the board.

Hence, in the absence of exceptional circumstances justifying the admittance of this objection at such a late stage of proceedings, the board decided pursuant to Article 13(2) RPBA not to admit the appellant's objection under Article 84 EPC into the proceedings.

The board notes that the expression objected to is present in the paragraphs of the application as filed which served as the basis for the amendment and include a definition in paragraph [0026], or in the corresponding paragraph [0045] of the patent as granted. Furthermore, the board *prima facie* did not consider the term unclear. Against this background the

board saw no reason to further consider this issue *ex officio* at this late stage of the proceedings.

Since there were no further objections, the set of claims of auxiliary request 2 is allowable.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the opposition division with the order that the patent be maintained in amended form with claims 1 to 3 of auxiliary request 2 filed with the reply to the statement of grounds of appeal, and a description to be adapted thereto, where necessary.

The Registrar: The Chairman:

C. Vodz M. O. Müller

Decision electronically authenticated