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Datasheet for the decision of 16 March 2017

Case Number: T 2077/13 - 3.2.01

Application Number: 05108389.7

Publication Number: 1637353

IPC: B60C1/00, C08L9/06, C08L9/00, C08K3/36

Language of the proceedings: EN

Title of invention:
Pneumatic tire having a tread containing immiscible rubber blend and silica

Patent Proprietor:
The Goodyear Tire & Rubber Company

Opponent:
Beckmann, Claus

Headword:

Relevant legal provisions:
EPC Art. 56
RPBA Art. 13(1)

Keyword:
Inventive step - (no)
Late-filed auxiliary requests not substantiated - admitted (no)

Decisions cited:

Catchword:

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Case Number: T 2077/13 - 3.2.01

D E C I S I O N
of Technical Board of Appeal 3.2.01
of 16 March 2017

Appellant: (Patent Proprietor)	The Goodyear Tire & Rubber Company 1144 East Market Street Akron, OH 44316-0001 (US)
Representative:	Kutsch, Bernd Goodyear S.A. Patent Department Avenue Gordon Smith 7750 Colmar-Berg (LU)
Respondent: (Opponent)	Beckmann, Claus Kraus & Weisert Patentanwälte PartGmbB Thomas-Wimmer-Ring 15 80539 München (DE)
Decision under appeal:	**Decision of the Opposition Division of the European Patent Office posted on 3 June 2013 revoking European patent No. 1637353 pursuant to Article 101(3)(b) EPC.**

Composition of the Board:

Chairman G. Pricolo
Members: W. Marx
S. Fernández de Córdoba

Summary of Facts and Submissions

I. On 29 July 2013 the patent proprietor lodged an appeal against the decision of the opposition division revoking European patent No. 1 637 353.

II. In its decision the opposition division held *inter alia* that the subject-matter of claim 1 as granted (main request) and of claim 1 according to the second auxiliary request did not involve an inventive step in view of the following prior art document:
D3: JP-H07-292161 A.

III. The respondent (opponent) submitted with its reply to the appellant's grounds of appeal the following additional evidence:
D11: ASTM Standard D 3418 - 82 (Reapproved 1988) ("Standard Test Method for Transition Temperatures of Polymers By Thermal Analysis")

IV. The appellant (patent proprietor) filed first to third auxiliary requests with letter dated 14 February 2017. A fourth auxiliary request was filed and received by fax on 15 March 2017 at 13:02:26.

V. Oral proceedings before the board took place on 16 March 2017.

The appellant (patent proprietor) requested that the decision under appeal be set aside and the patent be maintained as granted (main request) or, in the alternative, that the patent be maintained in amended form on the basis of the first auxiliary request (filed as second auxiliary request with the letter dated 14 February 2017) or the second auxiliary request (filed as fourth auxiliary request with the letter

dated 15 March 2017). All other auxiliary requests were withdrawn.

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

VI. Claim 1 as granted according to the main request reads as follows:

"A pneumatic tire having a tread comprising a vulcanizable rubber composition comprising, expressed as parts by weight per 100 parts by weight of elastomer (phr),

(A) 60 to 95 phr of solution-polymerized styrene-butadiene rubber with a bound styrene content of from 35 to 45 percent by weight, a vinyl 1,2 content of from 15 to 30 percent by weight based on the butadiene content, and a Tg of from -40°C to -20°C;

(B) 5 to 40 phr of cis-1,4 polybutadiene having a Tg of from -95°C to - 105°C;

(C) 50 to 150 phr of silica;

(D) 30 to 70 phr of processing oil; and

(E) 0.5 to 20 phr of a sulfur containing organosilicon compound."

In claim 1 according to the first auxiliary request, compared to claim 1 according to the main request, modified ranges for the bound styrene content of "38 to 42 percent by weight" and the vinyl 1,2 content of "20 to 25 percent by weight" have been specified.

Claim 1 of the second auxiliary request has been amended by adding at the end of claim 1 of the first auxiliary request the following feature taken from the description:

"...wherein a graphical plot of the Tan delta versus temperature curve of the rubber composition has two peaks in the curve with one peak having its apex within a relatively low temperature range of -110°C to -70°C and a second peak with its apex within a higher temperature range of -35°C to +10°C."

VII. The appellant (patent proprietor) essentially argued as follows:

The only relevant document on file for the assessment of inventive step of claim 1 was D3. It was agreed that Example 13 of D3 came closest to the claimed invention and had comparable Tg values, so the crucial difference was the vinyl 1,2 content. Experiments with a rubber composition close to a rubber composition of Example 13 of D3 had been conducted and compared to a rubber composition in accordance with the rubber composition of claim 1 of the patent-in-suit (see Table 1 and the two charts showing the loss modulus E'' vs. temperature and the measurement of tan delta or tan (E''/E') vs. temperature, with E' being the storage module, as enclosed to the grounds of appeal). The composition in accordance with claim 1 comprised cis-1,4 polybutadiene rubber (BR) to improve resistance to abrasion of a tire (i.e. tread wear) and solution polymerized styrene-butadiene rubber (SSBR) to improve wet skid resistance and traction. When both rubbers were used together in a rubber compound, they usually formed a single elastomer phase as it was evidenced by a single peak in the enclosed charts. If these two elastomers had the features in accordance with sections A, B of claim 1, the BR elastomer was relatively incompatible with the SSBR elastomer, so that two elastomer phases were established, as it was evidenced by two separate peaks in the enclosed charts (the two peaks were particularly

pronounced when SSBR had the features of claims 2, 3 as granted, see first auxiliary request). Only under these conditions, the full benefits of the use of BR in terms of tread wear and of the use of SSBR in terms of traction/wet grip were realised, since both rubbers worked essentially independently in the rubber composition. Traditionally, it had been difficult to improve both characteristics at the same time and independently of each other, which was possible with a rubber composition in accordance with granted claim 1. The respective comparative sample rubber composition, although it was as such quite similar to the sample rubber composition in accordance with this claim 1, had only one peak in the enclosed charts instead of two peaks in case of the sample rubber composition.

Example 13 of D3 was not exactly reproduced - but close to - in the comparative sample rubber composition (the required bound styrene content, vinyl 1,2 content and Tg of the SSBR and the required Tg of the BR was not available). Nevertheless, there was a significant technical effect when changing the comparative sample rubber composition - and also the Example 13 of D3 - to a rubber composition in accordance with claim 1 of the patent-in-suit. This technical effect was due to the formation of two relatively incompatible phases within the rubber composition of which one was a BR phase with a peak at about -95°C in the tan delta vs. T plot and the second was a SSBR phase with a peak at about -28°C in the tan delta vs. T plot. In case the vinyl 1,2 content of SSBR was above the claimed range of 15 to 30 weight percent, such as the 34.2 (or 33) weight percent in the comparative sample (or Example 13 of D3), these two elastomer phases disappeared and only one phase with a slightly broader peak in the tan delta (or E') vs. T plot shifted towards lower temperatures compared

to the SSBR phase peak was observed, i.e. there was no possibility for the invention's goal of an independent improvement of both tread wear and wet grip or traction characteristics.

In view of the above, there was a technical effect linked to the amount of 1,2 vinyl of the SSBR rubber. The parameter Tg had an influence on the presence of two elastomer phases as well, although the contribution of the vinyl 1,2 content was larger.

Starting from example 13 of D3, the objective technical problem to be solved was no longer to provide simply any further composition for a tire tread but - due to the existing technical effect - to optimize tread wear and wet skid resistance or traction characteristics of the tire at the same time and to thereby provide an improved balance between them. The question was whether a person skilled in the art, starting from Example 13 of D3, would be prompted to reduce the vinyl 1,2 content to at most 30 weight percent.

D3 disclosed that 30 to 55 weight percent of vinyl 1,2 content was a preferred range, i.e. there was only an overlapping point with the claimed range, but D3 gave the guidance (page 10, first paragraph) that a higher vinyl 1,2 content was better in terms of heat built-up, i.e. guided away from using only 30 weight percent. There was simply no motivation for a person skilled in the art to set the vinyl 1,2 content to at most 30 weight percent ("could-would"). Moreover, D3 gave a pointer (paragraph [0031]) to rather use low-cis BR as a blend with SSBR because of improved processability.

Auxiliary request 1 had already been filed in opposition proceedings and was no surprise. Moreover,

it focused by way of limitation on the arguments as discussed for the main request, so the technical discussion did not change. As to auxiliary request 2, it was filed in reaction to an objection raised by the board in its preliminary opinion under point 2.3.

VIII. The respondent's (opponent's) arguments relevant to the present decision may be summarised as follows:

Contrary to what the opposition division assumed, there was no relevant difference between the tire of claim 1 and the teaching of D3 with respect to the glass transition temperature (Tg) of cis-1,4-polybutadiene (D3: -108°C; lower limit in claim 1: -105°C). The methods for determining Tg in the opposed patent and D3 ("peak midpoint" compared to "onset point" by DSC at a temperature increase rate of 10°C per minute) were different, and D11 showed that the extrapolated onset temperature was lower than the midpoint temperature in such DSC measurements. Moreover, according to D11 duplicate determinations of Tg on two specimens of the same sample should not differ by more than 2.5°C (repeatability) or 4.0 °C (reproducibility).

The facts submitted by the appellant did not provide a relevant comparison between the closest prior art and the claimed invention to demonstrate a relevant technical effect. The data submitted did not support the conclusion that a difference in the vinyl 1,2 content in the SSBR of no more than 3% (difference between upper limit in claim 1 and Example 13 of D3) alone produced any relevant technical effect. The two compositions compared by the appellant differed in the vinyl 1,2 content by more than 10% and differed also quite significantly (40% vs. 33%) in the bound styrene content. A further difference existed in the Tg of the

SSBR (-31°C vs. -35°C), and the appellant had asserted that a small difference in Tg had an influence on the presence of two elastomer phases. The results obtained for the comparative sample rubber composition did not show that the rubber composition of Example 13 of D3 exhibited a single elastomer phase, because the latter was very similar to that recited in claim 1 (and less similar to the comparative sample rubber composition), which suggested that it also exhibited two phases. Moreover, even assuming that the number of peaks in the plots submitted by the appellant was indicative of the number of phases in the compositions examined, the plots did not demonstrate a significant improvement in any of the tire properties measured for the examples of the patent (in particular: balance between abrasion resistance and traction properties). The qualitative differences in the plots were not conclusive in this regard, as shown by the rather speculative language used in the patent itself (see paragraph [0019]: "may suggest a promotion of improved resistance to abrasion property").

In the absence of any evidence for a relevant technical effect of the technical feature that - at best marginally - distinguished the claimed tire from the closest prior art, the opposition division's assessment of inventive step remained fully valid. D3 already taught an improved balance between wet skid resistance and abrasion resistance of the rubber for tire treads.

If the appellant was of the opinion that the features of claims 2 and 3 of the patent (auxiliary request 2 in the opposition proceedings) made any difference for the assessment of inventive step, it should have submitted a corresponding request with its grounds of appeal, which it deliberately did not do. Moreover, the

appellant had not provided any reasons as to why the contested decision was wrong with regard to the auxiliary requests. Therefore, filing requests one month prior to the date of oral proceedings was an abuse of procedure.

Reasons for the Decision

1. Claim 1 as granted - inventive step (Article 56 EPC)

1.1 As found by the opposition division and agreed by the appellant, Example 13 in D3 comes closest to the subject-matter of claim 1 as granted. Moreover, as convincingly argued by the respondent on the basis of document D11 (see above point VIII.), there is no relevant difference between the tires of claim 1 and D3 with respect to the glass transition temperature of cis-1,4-polybutadiene (Tg), since different methods for determining Tg by differential scanning calorimetry (DSC) were used in D3 and in the contested patent.

Therefore, the only difference between the subject-matter of granted claim 1 and Example 13 of D3 is the vinyl 1,2 content in polymer (A) according to claim 1 (claim 1: 15 to 30 percent by weight; Example 13 of D3: 33% by weight). This was no longer in dispute in the oral proceedings.

1.2 According to the contested decision (see point 6.3), there was no evidence on file as to any technical effect that may derive from this distinguishing feature. To this end, the appellant enclosed to its statement of grounds of appeal the results of experiments (see Table 1 and two charts showing loss

modulus E'' and tan delta vs. temperature) conducted with a rubber composition close to a rubber composition of Example 13 of D3 (showing one peak) and a rubber composition in accordance with claim 1 as granted (showing two peaks).

As alleged by the appellant (see above point VII.), the two separate peaks for a rubber compound according to claim 1 as granted (particularly pronounced for SSBR according to granted claims 2 and 3) indicated two elastomer phases of the two relatively incompatible elastomers cis-1,4 polybutadiene rubber (BR) and solution polymerized styrene-butadiene rubber (SSBR). Both rubbers worked independently in the claimed rubber composition, and tread wear (by using BR) and wet grip or traction characteristics (by using SSBR) allegedly could be improved at the same time and independently of each other.

1.3 The board finds that the comparative test results as submitted with the grounds of appeal were not suitable for acknowledging a technical effect attributed only to a deviation of 3% by weight between the upper limit of the claimed range of vinyl 1,2 content in claim 1 as granted (15 to 30% by weight) and the vinyl 1,2 content disclosed in Example 13 of D3 (33% by weight). Apart from the fact that example 13 of D3 was not exactly reproduced, according to Table 1 (enclosed to grounds of appeal) the two rubber compositions that were compared differ not only in their vinyl 1,2 content by more than 10%, but also in their bound styrene content by 7% and in the Tg of the SSBR rubber (-31°C vs. -35°C). As acknowledged by the appellant, a small difference in Tg has an influence on the presence of two elastomer phases as well.

Even following the appellant in that the two peaks in the chart plots (E'' and Tan delta vs. temperature) of the comparative test results were indicative of two elastomer phases and might suggest an improved abrasion resistance to wet grip property, the board is not convinced that the two peaks result from a small variation in the vinyl 1,2 content alone. Due to a greater similarity between the rubber compositions in Example 13 of D3 and granted claim 1, in comparison to the two sample compositions which form the basis for the comparative tests, the rubber composition according to Example 13 of D3 might also show two peaks and form two elastomer phases, as alleged for the rubber composition claimed in the patent-in-suit. Therefore, the board considers that the appellant has failed to provide the documentary evidence necessary for supporting its view that two elastomer phases disappeared in case the vinyl 1,2 content of SSBR was above the claimed range, i.e. above 30% by weight. The single peak observed for the comparative sample rubber composition might not result from a modification in the vinyl 1,2 content alone but might also result, alone or in combination, from the modified bound styrene content or the modified Tg of the SSBR rubber. In view of the above it can be left open whether the number of peaks in the plots demonstrates an improved balance in the tire characteristics.

1.4 In the absence of a clear evidence that the deviation in the vinyl 1,2 content of Example 13 of D3 from the range specified in granted claim 1 produces a relevant technical effect, the board follows the opposition division's assessment that the subject-matter of claim 1 as granted does not involve an inventive step. Starting from Example 13 of D3, the problem to be solved may only be seen in the provision of a further

composition for a tire tread. Since D3 itself contemplates the use of SSBR polymers having a vinyl 1,2 content of 25 to 57% by weight (see claim 3), the skilled person would be prompted to choose particular values falling within the ambit of the range specified in claim 1 as granted.

The board cannot follow the appellant's view that D3 guides away from the claimed invention. D3 explicitly proposes (see description page 10, lines 8-9) ranges for the vinyl 1,2 content that "preferably" start with 27 or 30% by weight. Only values smaller than 25% should be avoided according to the teaching of D3, due to an undesirably large heat build-up, i.e. the skilled person is not discouraged from using SSBR rubber having a vinyl 1,2 content of 25% or higher.
It might be recommended in D3 to use low-cis BR as a blend with SSBR for improved processability, however, this argument is considered irrelevant because the closest prior art is represented by Example 13 of D3, in which a high-cis BR (see specimen 19 in Table 1-2) is used which corresponds to polymer (B) according to claim 1 as granted.

1.5 The board therefore comes to the conclusion that the subject-matter of claim 1 as granted does not involve an inventive step (Article 56 EPC).

2. Admission of auxiliary requests 1 and 2

2.1 Auxiliary request 1

2.1.1 Auxiliary request 1 was filed as auxiliary request 2 with the appellant's letter dated 14 February 2017, in response to the summons to oral proceedings pursuant to

Rule 115(1) EPC. It corresponds to auxiliary request 2 already filed in opposition proceedings and dealt with in the contested decision. According to the contested decision, the subject-matter of this request was still lacking an inventive step, since all the parameters of the polymers (A) and (B) according to claim 1 remained within the generic teaching of D3 so that the skilled person would be prompted to choose them.

In its letter dated 14 February 2017, the applicant only stated that claim 1 of auxiliary request 2 was a combination of claims 1 to 3 as granted. The letter contained neither a justification for the late filing of this request more than three years after the statement of grounds of appeal received on 28 September 2013, nor any reasoning as to why the respective findings in the decision under appeal should be reversed or amended.

The present auxiliary request 1 is therefore to be regarded as belated and as not being substantiated.

2.1.2 Under Article 13(1) RPBA, the boards have discretion to admit and consider any amendment to a party's case after it has filed its grounds of appeal or reply. The discretion shall be exercised in view of *inter alia* the complexity of the new subject matter submitted, the current state of the proceedings and the need for procedural economy. In order to be admitted, amended claims filed only shortly before or during the oral proceedings must in general be *prima facie* allowable in the sense that it is immediately apparent to the board that they overcome all outstanding issues without raising new ones (see Case Law of the Boards of Appeal (CL), 8th edition, IV.E.4.1.3, 4.2.2). Furthermore, it should be considered whether there is

a proper justification for its late filing so as to forestall procedural abuse.

2.1.3 Present auxiliary request 1 has been filed without any substantiation at a rather late stage of the appeal proceedings, in particular without justifying its late filing and without any reasoning as to why the contested decision was wrong in denying an inventive step. Such behaviour of the appellant does not serve the purpose of procedural economy and is at odds with the requirements of Article 12(2) RPBA, according to which the statement of grounds of appeal and the reply shall contain a party's complete case, setting out clearly and concisely the reasons why it is requested that the decision under appeal be reversed, amended or upheld. In case of a patent proprietor appealing against a decision of the department of first instance, the statement of grounds of appeal should also include all requests (see CL, IV.E.4.2.1).

2.1.4 The appellant argued that auxiliary request 1 had already been filed as auxiliary request 2 in opposition proceedings and was no surprise. However, filing this request that was previously known to the parties at a late stage of the appeal proceedings does not exempt the appellant from its obligation to provide at least some substantiation with regard to the allowability of this request, in particular since this request was found not allowable by the opposition division. Also the appellant's assertion that the technical discussion remained the same as for the main request does not relieve the appellant patentee from its obligation to provide a complete case with its grounds of appeal by filing and substantiating at least those requests for which the contested decision allegedly was wrong, as intended by the provisions of Article 12(2) RPBA.

2.1.5 Thus, in the absence of any justification for the filing of present auxiliary request 1 at such a late stage of the appeal proceedings, and also in view of the fact that the request was neither substantiated nor - for lack of reasoned arguments as to why the contested decision was wrong in respect of this request - *prima facie* allowable, the board exercised its discretion under Article 13(1) RPBA not to admit auxiliary request 1 into the appeal proceedings.

2.2 Auxiliary request 2

2.2.1 Auxiliary request 2 was filed as auxiliary request 4 on 15 March 2017, i.e. the day before oral proceedings, allegedly in reaction to the board's communication pursuant to Article 15(1) RPBA. However, the board cannot see that it had raised in its communication any new issue apart from summarising the respondent's arguments. The board therefore cannot see that the late filing of this request was justified by filing it in reaction to the board's preliminary opinion.

2.2.2 Claim 1 of present auxiliary request 2 contains additional features taken from the description (paragraph [0017]), which specify in more detail that "a graphical plot of the Tan delta vs. temperature curve of the rubber composition has two peaks in the curve with one peak having its apex within a relatively low temperature range of -110°C to -70C° and a second peak with its apex within a higher temperature range of -35C to +10°C", as indicated by the appellant patentee in its letter dated 15 March 2017.

As can be derived from the contested decision (first paragraph on page 13), the opposition division already

took note of this additional feature, in particular the problem that the patent did not disclose how Tan delta was measured (which might affect the resolution of the graphical representation) so that "if included into claim 1, the question would arise as to whether the (unspecified) conditions of measurement may cause a shift of a peak and thus make it appear within or without these preferred ranges of temperature depending on the method of measurement".

However, the appellant not only did not substantiate in its letter why the amendment made would overcome the outstanding objections in these appeal proceedings but also failed to address the above objection that was already raised in the contested decision. Moreover, the added feature extracted from the description would require an examination as to the conformity of the amendments with the requirements of Articles 123(2) and 84 EPC. Under these circumstances, having regard to the state of the proceedings and the need for procedural economy, the board takes the view that it is justified in exercising its discretion under Article 13(1) RPBA not to admit the auxiliary request 2 into the appeal proceedings under Article 13 (1) RPBA.

3. Since the appellant's main request is found unallowable and the auxiliary requests are not admitted into the appeal proceedings, the appeal is to be dismissed.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

A. Vottner G. Pricolo

Decision electronically authenticated