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D E C I S I O N
of 20 September 2004

Case Number: T 0769/02 - 3.3.3

Application Number: 96113925.0

Publication Number: 0761733

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Language of the proceedings: EN

Title of invention:

Rubber compositions and pneumatic tires using the same

Applicant:

Bridgestone Corporation

Opponent:

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Headword:

-

Relevant legal provisions:

EPC Art. 83, 84

Keyword:

"Clarity (yes) - definition by data to be calculated from the results of routine analysis not objectionable"

"Sufficiency - no undue burden"

Decisions cited:

T 0226/85, T 0256/87

Catchword:

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Case Number: T 0769/02 - 3.3.3

D E C I S I O N
of the Technical Board of Appeal 3.3.3
of 20 September 2004

Appellant: Bridgestone Corporation
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Decision under appeal: Decision of the Examining Division of the
European Patent Office announced orally on
14 November 2001 and issued in writing on
26 November 2001 refusing European application
No. 96113925.0 pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: R. Young
Members: P. Kitzmantel
A. Pignatelli

Summary of Facts and Submissions

- I. This appeal, which was filed on 22 January 2002 lies against the decision of the Examining Division announced orally on 14 November 2001 and issued in writing on 26 November 2001, refusing European patent application No. 96 113 925.0 filed on 30 August 1996 in the name of Bridgestone Corporation, published under No. 0 761 733, and claiming two JP priorities both of 31 August 1995.
- II. The appeal fee was paid together with the Notice of Appeal and the Statement of Grounds of Appeal was filed on 8 April 2002.
- III. The decision under appeal was based on a set of claims of a (first) main request submitted on 29 February 2000 as well as on sets of claims of a (second) main request and of first and second auxiliary requests each filed at the oral proceedings held on 14 November 2001.

Claim 1 of the (first) main request reads:

"A rubber composition comprising:
a rubber component consisting of at least one modified conjugated diene-base synthetic rubber optionally blended with a natural rubber; a rubber obtained by polymerizing a conjugated diene monomer or a rubber obtained by copolymerizing a conjugated diene monomer and a vinyl aromatic hydrocarbon monomer; and
a carbon black in an amount of 30 to 120 parts by weight per 100 parts by weight of the rubber component, said rubber composition being characterized in that:

the carbon black has both of the characteristics represented by following equation (I) and equation (II):

Equation (I)

$$(\text{concentration of } >\text{C=O functional groups})/\text{N}_2\text{SA} \geq 4.0 \times 10^{-4}$$

Equation (II)

$$\begin{aligned} &(\text{concentration of } >\text{C=O functional groups}) \geq \\ &\quad (\text{concentration of } -\text{OH functional groups})^2 \\ &\quad - 0.1 \times (\text{concentration of } -\text{OH functional groups}) + 0.03 \end{aligned}$$

wherein (concentration of >C=O functional groups) expresses the concentration (meq/g) of functional groups which react with hydroxylamine and produce oxime; N₂SA expresses the nitrogen absorption specific surface area (m²/g); and (concentration of -OH functional groups) expresses the concentration (meq/g) of functional groups which participate in an acetylating reaction with acetic anhydride; wherein the modified conjugated diene-base synthetic rubber contains a functional group selected from tin-containing groups and nitrogen-containing groups."

Claim 1 of the (second) main request differs from this version by amendment (twice) of the term "modified conjugated diene-base synthetic rubber" to "end-modified conjugated diene-base synthetic rubber".

In addition to the afore-mentioned amendment, Claim 1 of the first auxiliary request in its final portion comprises further two amendments (in the following emphasised by the Board):

"wherein (concentration of >C=O functional groups) expresses the concentration (meq/g) of functional groups which react with hydroxylamine and produce oxime;

N₂SA expresses the nitrogen absorption specific surface area (m²/mg) falling within the range of 80 to 179 m²/g; and (concentration of -OH functional groups) expresses the concentration (meq/g) of functional groups which participate in an acetylating reaction with acetic anhydride; wherein the methods of measuring the concentration of >C=O functional groups, of -OH functional groups and N₂SA are as defined in the specification; and wherein the end-modified conjugated diene-base synthetic rubber contains a functional group selected from tin-containing groups and nitrogen-containing groups."

Claim 1 of the second auxiliary request combines the version according to the (first) main request with the two amendments of the first auxiliary request and with the additional feature (inserted after the passage "said rubber composition being characterized in that": "the carbon black is a carbon black obtained by oxidizing furnace black or channel-type carbon black with an oxidizing agent, a carbon black obtained by heating gas furnace carbon black or channel-type carbon black at temperatures of 100 to 900°C and that".

IV. The decision under appeal refused the application because, in its opinion, none of the requests complied with the requirements of Article 84 EPC.

(a) With regard to the (first) main request the Examining Division held that

(i) "(t)he person skilled in the art wishing to determine if his rubber/carbon black composition is falling under the scope of

claim 1 is faced with an undue burden as he must first use the specific methods presented in the application to determine the parameter [CO] and the parameter [OH] in order to solve the mathematical equations 1 and 2 of claim 1. The parameters [CO] and [OH] used in the claims are therefore not comparable to the same parameters known in the field and used in the prior art. This renders a comparison of the claimed compositions with the compositions of the prior art difficult, if not impossible" (Reasons, section 3, first paragraph).

- (ii) In the last paragraph of this section of the Reasons the Examining Division essentially repeated this statement in other words and concluded: "The claims lack therefore clarity according to article 84 EPC".

- (b) With regard to the (second) main request the Examining Division argued: "The parameters and the equations used in claims 1 and 5 of the main request are identical to the ones used in the last set of claims (29.02.00) [i.e. those according to the (first) main request]. Claims 1 and 5 of the main request lack clarity. ... The main request does not satisfy the requirements of article 84 EPC" (Reasons, section 4).

- (c) Similar arguments were advanced by the Examining Division to deny the compliance of the subject-matter of the first auxiliary request with the requirements of Article 84 EPC whose Claim 1

"precised that the methods used to determine the parameters [CO] and [OH] must be the method of the description" (Reasons, section 5).

- (d) The same reasoning was used by the Examining Division against the compliance of the subject-matter of the second auxiliary request with the requirements of Article 84 EPC, further supplemented by the statement:

"(t)he applicant agreed that the methods to prepare the carbon black and introduced in claim 1 of the auxiliary request do not lead with certainty to a carbon black satisfying equations 1 and 2. The parameters [CO] and [OH] and the mathematical equations 1 and 2 of claim 1 could therefore not be replaced by the methods used to prepare the carbon black". (Reasons 6)

- V. In the Statement of Grounds the Appellant relied on the previous main request [(second) main request of the decision under appeal] and on the first and second auxiliary requests as filed at the oral proceedings before the Opposition Division.

Its arguments can be summarized as follows:

- (a) With regard to the lack of clarity objection of the Examining Division reference was to be made to the case law of the Boards of Appeal according to which a definition by parameters was admissible provided that they could be clearly and reliably determined by objective procedures. The further

requirement under Article 83 EPC was that the description enabled the skilled person to obtain the claimed product.

- (b) Reference was also made to the Guidelines for Examination section C-III, 4.7a setting out:

"Cases in which unusual parameters are employed or a non-accessible apparatus for measuring parameter(s) is used are prima facie objectionable on grounds of lack of clarity, as no meaningful comparison with the prior art can be made."

- (c) In the Appellant's view, the present specification fulfilled all these requirements:

(i) There was no dispute that the skilled person could measure each parameter of the two equations, namely the concentration of the respective functional groups and the nitrogen absorption specific surface area which were no unusual parameters.

(ii) The specification contained a detailed description as to how these parameters might be measured.

- (d) The insertion of the measured parameters into equations (I) and (II) involved routine mathematics which could be rendered less laborious by using a computer, possibly with the help of a mathematician. Reference was again made to the Guidelines C-III, 4.7a:

"Parameters are characteristic values which may be values of directly measurable properties or may be defined as more or less complicated mathematical combinations of several variables in the form of formulas".

- (e) It was accepted EPO practice that the method of measurement of a parameter need not be in the claim *inter alia* when the respective description was long; in that case the claim should contain a reference to the description in accordance with Rule 29(6) EPC.
- (f) Furthermore the specification also disclosed carbon black varieties fulfilling equations (I) and (II) and methods for their preparation.
- (g) It was also possible to determine whether a prior art carbon black fulfilled equations (I) and (II) because the concentrations of the [CO] and [OH] groups could be measured according to the method described in the specification. No undue burden was involved in this exercise.

VI. The Board in its communication dated 24 May 2004 made the following provisional comments:

"1. Main request

- 1.1 Claim 1 indicates the meaning of the terms "concentration of >C=O functional groups", "concentration of -OH functional groups" and "N₂SA" but fails to define the methods to be used for their determination. Since it had been established

by the Applicant (submission dated 16 August 2000, Table 1) that the methods which are disclosed in D4 (G.R. Cotton et al. "Effect of Chemical Modification of Carbon Black on Its Behaviour in Rubber", Kautschuk und Gummi, Kunststoffe Nr. 9, pages 477 to 485, 1969) lead to different results of the $[>C=O]$ and $[-OH]$ concentration, it is apparent that the measurement methods set out on pages 31 to 36 of the application as filed are essential for the claimed invention.

1.2 According to established case law of the Boards of Appeal (Case Law, 4th edition, December 2001, pages 158 to 159, section 1.1.2) a claim has to indicate all essential features of the invention.

1.3 Claim 1 therefore contravenes the requirements of Article 84 EPC. Consequently, the main request is not allowable.

2. First auxiliary request

2.1 Claim 1, amendments

2.1.1 The newly introduced range of 80 to 179 m²/g of the "nitrogen absorption [should read: adsorption] specific surface area" is supported by the N₂SA values of, respectively, carbon blacks G and M (Table 1, page 41 of the application as filed).

Since nitrogen adsorption is a property whose impact on the rubber reinforcing characteristics of carbon black is independent from the other parameters referred to in equations (I) and (II)

and since these two values are not arbitrarily chosen from Table 1 but represent the carbon black varieties having the lowest and highest N₂SA values, this feature is considered to meet the requirements of Article 123(2) EPC.

2.1.2 Also the further amendment, i.e. the reference to the methods of measurement "as defined in the specification" complies with the requirements of Article 123(2) EPC; it is also admissible in respect of Rule 29(6) EPC because the lengths of the respective definitions stands in the way of their insertion into the claim (cf. Guidelines for examination, part C-III, 4.10).

2.2 Claim 1, Article 84 EPC

2.2.1 The decision under appeal concluded that the requirements of this article were not met. In its view, the person skilled in the art wishing to determine if a rubber/carbon black composition was within the scope of claim 1 was faced with undue burden because he must first determine the parameters [CO] and [OH] and then perform the calculations according to the equations (I) and (II).

2.2.2 The Board is however of the opinion that the requirement of clarity is met because the equations (I) and (II) are mathematically sound and understandable and because the parameters "concentration of >C=O functional groups", "concentration of -OH functional groups" and "N₂SA" are duly defined and furthermore expounded by

reference to the description to a degree sufficient for the comprehension of the skilled person.

- 2.2.3 Furthermore, in the Board's view, the Examining Division's objection that it required an undue burden to establish whether a certain carbon black met the definition of Claim 1 is unrelated to the requirements of Article 84 EPC.

Insofar as this objection concerns questions of infringement it is not within the competence of the EPO, and insofar as it concerns the question of sufficiency of the disclosure it relates to Article 83 EPC.

3. Article 83 EPC

- 3.1 This issue is to be assessed on the basis of the application as a whole which according to this article must disclose the invention in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art.

- 3.1.1 It is apparent and was not denied by the Examining Division that the information in the application enables the skilled person to practice the invention by subjecting available carbon black varieties to a screening program. However, in the Division's view this exercise involved undue burden, possibly because the application was considered to lack instructions as to how to purposefully pre-select promising candidates and turn initial failure into success.

3.2 The Board is not convinced by these arguments. In its judgment, the application-in-suit comprises all the information - in the form of directly measurable structural component characteristics - that is necessary to put the skilled person in a position of being able to carry out the invention and of knowing when he is working within the forbidden area of the claims (cf. T 0256/87 of 26 July 1988, Reasons 17).

The present situation is different from the one where an invention is characterised by effect-related functional features used to "round up" the definition of the claimed subject-matter in order to limit a feature (eg component) to those of its meanings which belong to the invention if a characterisation of this feature cannot be made (or would be too narrow) by directly measurable objective attributes. In this situation the skilled person depends on a reliable and practically feasible method in order to ascertain the exact scope of the claimed subject-matter (cf. T 0226/85 OJ EPO 1988, 336, Reasons 4, 8).

In the case of present Claim 1, however, there is no need to resort to experiments to assess the exact scope of the claimed subject-matter, the carbon black inclusive, because the invention is unambiguously characterised by directly measurable structural component characteristics which allow their reduction to practice in an objective fashion. In this situation the necessity to carry out chemical and physical measurements which are

then mathematically converted to numerical values in order to find out those carbon black varieties which meet the characteristics of Claim 1 does not amount to undue burden.

3.3 Amendments, further claims

3.3.1 There appears to be no basis in the application as filed for the generic term "nitrogen-containing compound" in Claim 9 but only for the three particular groups of compounds specified in Claim 13.

3.3.2 It appears that the feature "p+q=4" is missing from the definition in Claim 10 (cf. page 19, lines 16 to 23).

4. Further prosecution

4.1 In view of the above considerations and since the decision under appeal only referred to the issue of clarity, the Board intends to refuse the main request and to remit the case to the first instance for continuing the substantive examination.

4.2 You are asked to declare whether, under these circumstances, your request for oral proceedings is upheld."

VII. In its reply to this communication dated 27 July 2004 the Appellant declared to make the previous first auxiliary request its new main request and to maintain

the previous second auxiliary request as new first auxiliary request.

The (new) main request has furthermore been amended as suggested in section 3.3 of the Board's afore-quoted communication:

- (a) In Claim 9 the term "nitrogen-containing compound" has been replaced by the definition of this compound as set out in Claim 13,
- (b) in Claim 10 the definition of the tin carboxylate compounds has been supplemented after the passage "p is an integer from 0 to 3" by the feature "and $p+q=4$ ",
- (c) previous Claim 13 has thus been deleted, and
- (d) previous Claims 14 to 17 have accordingly been renumbered to 13 to 16 (including consequential amendment of the back references).

In this submission the Appellant also abandoned its previous request to hold oral proceedings and agreed to the Board's suggestion that the further examination of the case should be carried out before the first instance.

- VIII. Accordingly, the Appellant requested that the decision under appeal be set aside and that the case be remitted to the first instance for continuation of the substantive examination on the basis of Claims 1 to 16 of the main request submitted with the letter dated 27 July 2004, subsidiarily on the basis of Claims 1 to 17 of the first auxiliary request filed with the same letter.

Reasons for the Decision

1. The appeal is admissible.

Main request

2. *Amendments*

In view of the comments made in section 2.1 of the afore-quoted communication of the Board and in view of the amendments carried out in Claims 9 and 10 the Board recognises the compliance of the claims of this request with the requirements of Article 123(2) EPC.

3. *Clarity (Article 84 EPC)*

Contrary to the conclusions of the Opposition Division, the Board is satisfied that Claim 1 meets this requirement, the reasons being set out in section 2.2 of its communication.

For the same reasons the identical lack of clarity objections of the Opposition Division against independent Claim 5 and dependent Claims 2 to 4 and 6 to 16 (previously 6 to 17) are considered unfounded.

4. *Sufficiency (Article 83 EPC)*

In the Board's judgment, the disclosure of the claimed invention is sufficiently clear and complete for it to be carried out by a person skilled in the art, the reasons being set out in section 3 of the said communication.

5. In view of the fact that the reasons underlying the decision under appeal against the prosecution of the application on the basis of the present main request

are not upheld by the Board, there is no need, at this stage, to consider the present first auxiliary request.

6. Since the decision under appeal only relied on the alleged lack of clarity of the claimed subject-matter, an objection not maintained by the Board, and since a thorough investigation of further issues of substantive examination, novelty and inventive step inclusive, is still outstanding, it is considered appropriate by the Board to remit, in accordance with Article 111(1) EPC, the case for this purpose to the first instance.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The case is remitted to the first instance for further prosecution.

The Registrar:

The Chairman:

E. Görgmaier

R. Young