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Datasheet for the decision of 17 May 2018

Case Number: T 1626/13 - 3.2.05

Application Number: 97917754.0

Publication Number: 0892705

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Language of the proceedings: EN

Title of invention:
Novel elastomer composites, method and apparatus

Patent Proprietor:
Cabot Corporation

Opponent:
Bridgestone Corporation

Headword:

Relevant legal provisions:
EPC 1973 Art. 56, 100(b), 111(1)
EPC Art. 123(2)
RPBA Art. 12(4)

Keyword:

Inventive step - main request (no)
Late-filed auxiliary requests - admitted (yes)
Amendments - added subject-matter - first auxiliary request (yes)
Sufficiency of disclosure - second auxiliary request (yes)
Remittal to the department of first instance (yes)

Decisions cited:

G 0009/92

Catchword:

Europäisches Patentamt
European Patent Office
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Beschwerdekammern

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Case Number: T 1626/13 - 3.2.05

D E C I S I O N
of Technical Board of Appeal 3.2.05
of 17 May 2018

Appellant: (Patent Proprietor)	Cabot Corporation Two Seaport Lane, Suite 1300 Boston, Massachusetts 02210-2019 (US)
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Decision under appeal:	**Interlocutory decision of the Opposition Division of the European Patent Office posted on 8 May 2013 concerning maintenance of European Patent No. 0892705 in amended form**

Composition of the Board:

Chairman	M. Poock
Members:	P. Lanz
	J. Geschwind

Summary of Facts and Submissions

I. The appeal by the patent proprietor is against the interlocutory decision of the opposition division on the version in which European patent EP-B-0 892 705 met the requirements of the European Patent Convention.

II. During the opposition proceedings, the opponent had raised the grounds for opposition according to Article 100(a) (lack of novelty, lack of inventive step, lack of susceptibility of industrial application), 100(b) and 100(c) EPC 1973.

III. Oral proceedings were scheduled for 17 May 2018. However, since both parties announced that they would not attend, the board cancelled the oral proceedings and decided the present case in written proceedings.

IV. The appellant (patent proprietor) requests that the decision under appeal be set aside and that the patent be maintained on the basis of any of the claims filed as main request and as first to eighth auxiliary requests together with the statement setting out its grounds of appeal dated 18 September 2013. Moreover, the appellant requests that the case be remitted to the department of first instance for a decision on novelty and inventive step in respect of the subject-matter of claims 7 and 8.

It is observed that in its letter dated 30 December 2014 the appellant confirmed only the main request and the first to third auxiliary requests filed on 18 September 2013. However, silence on the part of the appellant on the remaining fourth to eighth auxiliary requests filed on 18 September 2013 cannot be interpreted as a withdrawal of those requests, as the

withdrawal of a request generally requires the party's unambiguous statement of withdrawal. Consequently, the appellant's requests as presented in the statement setting out its grounds of appeal are still considered valid.

V. The respondent (opponent) requests that the appeal be dismissed. Moreover, the respondent requests that the case be remitted to the department of first instance for a decision on novelty and inventive step in respect of the subject-matter of claims 7 and 8.

VI. The documents referred to during the appeal proceedings include the following:

D8: ASTM D2663;

D10: GB-B-705 344;

D10-1: US-B-2,769,795 including file history.

VII. Independent claim 1 of the main request is worded as follows:

"A method of producing elastomer composite, from elastomer latex, particulate filler and optionally other ingredients, characterized by:
feeding a continuous flow of first fluid comprising elastomer latex to a mixing zone of a coagulum reactor defining an elongate coagulum zone extending from the mixing zone to a discharge end;
feeding a continuous flow of second fluid comprising particulate filler under pressure to the mixing zone of the coagulum reactor to form a mixture with the elastomer latex, the mixture passing as a continuous flow to the discharge end and the particulate filler

being effective to coagulate the elastomer latex, wherein mixing of the first fluid and the second fluid within the mixing zone is sufficiently energetic to substantially completely coagulate the elastomer latex with the particulate filler prior to the discharge end; and discharging a substantially continuous flow of elastomer composite from the discharge end of the coagulum reactor."

In addition, the main request comprises an independent apparatus claim 6 and independent product claims 7 and 8.

VIII. Compared with the main request, claim 1 of the first auxiliary request contains the following amendments:

"... feeding a continuous flow of first fluid comprising elastomer latex under a line pressure of less than 69.0 kPa (gauge) (10 psig) to a mixing zone of a coagulum reactor defining an elongate coagulum zone extending from the mixing zone to a discharge end; feeding a continuous flow of second fluid comprising particulate filler ~~under pressure~~ at a pressure above 2668 kPa (gauge) (300 psig) to the mixing zone of the coagulum reactor to form a mixture with the elastomer latex ..."

IX. The independent claims of the second auxiliary request read as follows:

"1. A method of producing elastomer composite, from natural rubber latex, particulate filler and optionally other ingredients, characterized by:
feeding a continuous flow of first fluid comprising natural rubber latex to a mixing zone of a coagulum

reactor defining an elongate coagulum zone extending from the mixing zone to a discharge end;
feeding a continuous flow of second fluid comprising particulate filler under pressure to the mixing zone of the coagulum reactor to form a mixture with the natural rubber latex, the mixture passing as a continuous flow to the discharge end and the particulate filler being effective to coagulate the natural rubber latex,
wherein mixing of the first fluid and the second fluid within the mixing zone is sufficiently energetic to coagulate at least 95% of the rubber hydrocarbon of the latex coagulate *[sic]* with the particulate filler prior to the discharge end; and discharging a substantially continuous flow of elastomer composite from the discharge end of the coagulum reactor."

"6. Apparatus for producing elastomer composite of particulate dispersed in elastomer, comprising:
a coagulum reactor defining a mixing zone and an elongate coagulum zone extending from the mixing zone to a discharge end wherein the coagulum zone has progressively increasing cross-sectional area between the mixing zone and the discharge end;
latex feed means for feeding elastomer latex fluid continuously to the mixing Zone *[sic]*; and
filler feed means for feeding particulate filler fluid as a continuous jet into the mixing zone to form a mixture with the elastomer latex fluid travelling from the mixing zone to the discharge end of the coagulum zone."

"7. An elastomer composite comprising particulate filler dispersed in elastomer, characterized in that the elastomer comprises natural rubber and the macro-dispersion D(%) of the particulate filler in the elastomer composite being less than 0.2% undispersed

area, wherein measuring macro-dispersion involves measuring defects on a surface generated by microtoming, extrusion or cutting."

"8. An elastomer composite comprising particulate filler dispersed in elastomer, characterized in that the particulate filler is silicon coated carbon black, silicon treated carbon black, fumed silica, precipitated silica or a mixture of any of them and the macro-dispersion D(%) of the particulate filler in the elastomer composite being less than 0.2% undispersed area, wherein measuring macro-dispersion involves measuring defects on a surface generated by microtoming, extrusion or cutting."

X. The appellant's submissions may be summarised as follows:

Main request, claim 1 - inventive step

The subject-matter of claim 1 differed from document D10 not only in the features of

(a) an elongate coagulum zone extending from the mixing zone to a discharge end,

(b) feeding a continuous flow of second fluid comprising particulate filler under pressure to the mixing zone,

(c) to substantially completely coagulate the elastomer latex with the particulate filler prior to the discharge end

as established by the opposition division, but also in the aspect of

(d) the particulate filler being effective to coagulate the elastomer latex.

The object of the patent could be seen in providing a process which easily produced an elastomer latex having improved macro-dispersion, as disclosed in paragraph [0010]. It was a secondary object to provide a process for coagulating a latex/particulate filler mixture without the need to employ an acid or salt coagulation agent, as disclosed in paragraph [0012] of the patent.

The proposed solution was not rendered obvious by document D10, which stated that in the preparation of rubber compounds obtained from natural or synthetic rubber and carbon black an acid or other coagulating agent was required, even if its amount was substantially reduced (cf. page 2, lines 101 to 105). Moreover, in both embodiments of document D10 (cf. page 2, lines 47 to 57 and 58 to 70) the aqueous carbon black slurry and the latex were first mixed and subsequently coagulated by adding a coagulating agent. There was no indication in document D10 that the carbon black itself was effective to coagulate the elastomer latex, let alone that the elastomer latex was substantially completely coagulated with the particulate filler. This analysis of the order of processing steps disclosed in document D10 was further supported by document D10-1, a family member of document D10, and the file history of document D10-1. Since in document D10 either the latex was used as the energising fluid (first embodiment) or the carbon black slurry and the latex were both mixed while being under high velocity (second embodiment), there was no indication in this document to introduce the particulate slurry under pressure into the system, let

alone that in this case the particulate filler itself could act as the coagulating agent, as in the present patent. This meant that the particulate filler slurry itself was effective to substantially completely coagulate the latex within the elongate coagulum zone of the reactor. These features were not obvious from document D10. Finally, document D10 did not disclose any details about the equipment for conducting coagulation. Only a latex mixing equipment was described. Consequently, there could not be any indication in document D10 regarding a process of simultaneously carrying out mixing and coagulation within an elongated coagulum zone extending from the mixing zone to a discharge end and discharging substantially coagulated material as required in claim 1 of the main request. The subject-matter of claim 1 was thus based on an inventive step.

First auxiliary request, claim 1 - added subject-matter

The additional features of the first fluid being fed to the mixing zone at a line pressure of less than 69.0 kPa (gauge) (10 psig) and of the second fluid being fed to the mixing zone at a pressure above 2668 kPa (gauge) (300 psig) had their respective basis on page 16, lines 11 to 13, and page 29, lines 12 and 13, of the application as filed. The requirements of Article 123(2) EPC were met.

Second auxiliary request - sufficiency of disclosure in respect of claims 7 and 8

In each of claims 7 and 8, macro-dispersion D(%) of the particulate filler in the elastomer composite was defined as being less than 0.2% undispersed area. The macro-dispersion data in the examples of the present

patent was also disclosed as D(%), i.e. as percent undispersed area, which was in conformity with those claims. Furthermore, according to paragraph [0020] of the patent specification, macro-dispersion of the carbon black was measured as percent undispersed area for defects larger than 10 microns. These criteria were the basis for the method disclosed in paragraph [0007] of the patent specification. Therefore, there was a clear link between the reference to the macro-dispersion D(%) in claims 7 and 8 and the method in paragraph [0007] of the patent. It was also clear that the tests according to ASTM D2663 recited in paragraph [0060] were not applicable with regard to claims 7 and 8: as correctly stated by the opposition division, it was immediately evident to the skilled person that the Cabot Dispersion Chart method recited in paragraph [0060] and corresponding to test method A of ASTM D2663 could not be the test procedure used to determine the numerical values of the particulate filler dispersion in the numerous tables of the patent and in claims 7 and 8 because it was a qualitative test in which the dispersion was visually evaluated by comparing a sample with a reference of five standards (cf. document D8, page 404). Method B of ASTM D2663 was a method for determining the percentage of dispersion (i.e. not the undispersed area), as could be inferred from item 12 of document D8. Moreover, agglomerates of 5 µm or larger were counted, whereas in the patent specification the size of the agglomerates was 10 µm or larger. The same applied to method C of ASTM D2663. In view of that, the person skilled in the art, when considering test methods B and C of ASTM D2663, immediately saw that several modifications to these methods had to be conducted in order to determine the undispersed area as defined in claims 7 and 8 of the main request, modifications which were not mentioned in the present

patent at all. However, when considering the method disclosed in paragraph [0007] of the present patent, he would immediately arrive at this parameter without further modifications. Therefore, it was without any doubt evident to the skilled person that the method of paragraph [0007] was the method used to determine the macro-dispersion according to claims 7 and 8. Since the patent itself disclosed in paragraph [0007] a method which gave guidance on how to directly obtain the undispersed area as required in claims 7 and 8, the opposed patent disclosed the subject-matter of claims 7 and 8 in a way sufficiently clear and complete to allow a person skilled in the art to carry it out without undue burden. This conclusion was in line with decision T 452/04.

Remittal to the department of first instance

The opposition division had not decided on novelty and inventive step for product claims 7 and 8. It was therefore requested that the case be remitted to the department of first instance for a decision on novelty and inventive step in respect of the subject-matter of claims 7 and 8.

XI. The respondent's submissions were essentially as follows:

Main request, claim 1 - inventive step

The disclosure of document D10 had to be established objectively. It was therefore inadmissible to use document D10-1 to interpret the teaching of document D10. On the substance, it was noted that the opposition division's conclusion that differing features (a) to (c) were obvious was left essentially uncontested by

the appellant, and that the technical problems proposed by the appellant did not substantially differ from the problem suggested by the opposition division.

Regarding the argument that the particulate filler itself would act as the coagulating agent, it had to be taken into account that the wording of claim l required only that the mixing was sufficiently energetic to substantially completely coagulate the elastomer latex with the particulate filler; so this feature was not even novel over document D10 and consequently could not support an inventive step. Furthermore, the highly energetic mixing in document D10 was essentially the same as according to the claimed invention and belonged to the normal capability of the skilled person. In particular, in claim 1 of document D10 the wording was clear and non-limiting: *" [...] suddenly combining the stream of the resultant carbon black-slurry with a stream of rubber latex, effecting substantially instantaneously uniform mixing of the two streams [...]"*; claim 6 had a similar wording: *" [...] and uniformly mixing the turbulent stream of the suspension with a stream of the rubber latex [...]"*. No difference in the energy content (high pressure) of the two streams was claimed or necessary. On the other hand, a different energy content of the two streams was not excluded by the claims either. The true condition to be fulfilled was the intensive mixing of the two streams in order to coagulate all of the carbon black - this was what document D10 taught and what the patent in suit required.

As to the sequence of mixing and coagulation, document D10 (cf. claims 1 and 6) disclosed a process in which the carbon black slurry was agitated and mixed with a stream of latex until coagulation had been effected,

corresponding to the content of claim 1 of the patent in suit, *"wherein mixing of the first fluid [elastomer latex] and the second fluid [the particulate filler under pressure] within the mixing zone is sufficiently energetic to substantially completely coagulate the elastomer latex with the particulate filler"*. In view of the above, the subject-matter of claim 1 was obvious in view of the teaching of document D10.

First auxiliary request, claim 1 - added subject-matter

The added features of the first fluid being fed to the mixing zone at a line pressure of less than 69.0 kPa (gauge) (10 psig) and of the second fluid being fed to the mixing zone at a pressure above 2668 kPa (gauge) (300 psig) were taken out of their respective contexts in the application as filed. In particular, their combination was not originally disclosed.

Second auxiliary request - sufficiency of disclosure in respect of claims 7 and 8

The relevant question was whether or not the skilled person was able to produce an elastomer composite comprising a particulate filler dispersed in the elastomer with a macro-dispersion of the particulate filler in the elastomer composite as required by claims 7 and 8, i.e. of less than 0.2% undispersed area, and more precisely whether the disclosure of the patent in suit was complete enough to give the skilled person sufficient and clear guidance on how to measure the macro-dispersion of less than 0.2% undispersed area. Even if the skilled person found in paragraph [0020] of the description that the formula given in paragraph [0007] of the description was the one to be used because those two passages were linked by the statement

that the macro-dispersion of the carbon black was measured as percent undispersed area for defects larger than 10 µm, the measuring method in paragraph [0007] was disclosed in the "Background" section, meaning that this measuring method was to be used in the prior art and not specifically for the invention. Therefore, no direct relation to the measuring method which should be used for measuring the less than 0.2% undispersed area of claims 7 and 8 could be taken therefrom. Moreover, in paragraph [0005] of the description, also relating to the prior art, it was stated that considerable effort had been devoted to the development of procedures for assessing dispersion quality of carbon black in rubber, whereby the Cabot Dispersion Chart and various image analysis procedures were mentioned as examples. As these various image analysis procedures, for example those disclosed in ASTM D2663 (document D8), were known to the skilled person, he could also take these procedures into consideration when reading paragraph [0020] in relation to the invention. This was confirmed by paragraph [0060], which stated:

"[0060] The following test procedures were used in the examples and comparisons presented below".

and

"5. Dispersion: The Cabot Dispersion Chart method is used with subjective evaluation 0/50 x optical micrographs. (ASTM D2663 method)."

ASTM D2663 offered three different test methods for determining the degree of dispersion of carbon black in rubber, namely test methods A, B and C. Test method B measured the dispersion of carbon black in rubber quantitatively with the aid of a light microscope (cf.

document D8, pages 406 to 410). Test method C was a further quantitative test method for calculating the dispersion of carbon black in the examined rubber specimen (cf. document D8, pages 410 to 413). Even if the person skilled in the art did not choose method A, it was clear that he would select either one of the two quantitative test methods B or C to determine the dispersion of carbon black in the rubber. The problem, however, was that in ASTM D2663 the cross-sectional area of all agglomerates of 5 µm or larger was counted and used to calculate the percentage of carbon black having a size of less than 5 µm (cf. Document D8, page 406, section 13.1). By contrast, in paragraphs [0007] and [0020] of the patent the cut-off size was defined as being 10 µm. Hence, the skilled person did not have clear and sufficient guidance, either on the basis of this disclosure in the patent in suit or on the basis of the common general knowledge, as to which of the available methods to choose for measuring the macro-dispersion of less than 0.2% undispersed area. Since the dispersed and the undispersed area complemented each other, substantially no modification was necessary when applying test methods B and C of document D8 in the context of present claims 7 and 8. Hence, three different measuring methods could in principle be used. Since it was unclear which was the correct one, the scope of protection of the patent was unclear as well, which violated the principle of legal certainty. The facts underlying decision T 452/04 cited by the appellant differed from the present case, so that this decision could not give any guidance. However, decisions T 225/93 and T 360/08 confirmed the respondent's view that the disclosure of the patent was insufficient.

Reasons for the Decision

1. Main request, claim 1 - inventive step

1.1 Closest prior art

It is undisputed that document D10 forms the closest prior art. The appellant maintains that the subject-matter of claim 1 differs from the content of document D10 in the following differences (a) to (d):

(a) an elongate coagulum zone extending from the mixing zone to a discharge end,

(b) feeding a continuous flow of second fluid comprising particulate filler under pressure to the mixing zone,

(c) to substantially completely coagulate the elastomer latex with the particulate filler prior to the discharge end,

(d) the particulate filler being effective to coagulate the elastomer latex.

As to feature (a), it is noted that document D10 remains silent on the design of the coagulum zone. While it is generally stated that mixing is followed by coagulating (cf. page 2, lines 51 to 57 and lines 68 to 70), there is no unambiguous disclosure of the feature of an elongate coagulum zone extending from a mixing zone to a discharge end.

Regarding feature (b), relating to the feeding of a continuous flow of second fluid comprising particulate

filler under pressure to the mixing zone, document D10 proposes two different solutions (page 2, lines 51 to 68), namely either that a high-velocity stream of rubber latex serving as energising fluid is mixed with a second stream of carbon black slurry or that both streams have high velocity, which implies that both fluids are fed under pressure. Consequently, this second embodiment of document D10 discloses that the second stream is fed under pressure to the mixing zone, thereby anticipating feature (b).

With respect to feature (c), according to which the elastomer latex substantially completely coagulates with the particulate filler prior to the discharge end, it is noted that the wording *"substantially completely coagulates"* is vague. However, document D10 does not contain an unambiguous disclosure of a degree of coagulation of the elastomer latex with the filler.

Finally regarding feature (d), the carbon black filler of document D10, which is highly agitated and uniformly mixed with the latex, does not, as such, differ from the particulate filler intermixed with the elastomer latex according to claim 1. It is therefore not apparent that feature (d) is suitable for further distinguishing the claimed subject-matter from the prior art.

In view of these considerations, the subject-matter of claim 1 differs from document D10 in the above-mentioned features (a) and (c).

1.2 Technical effects and objective technical problem

As to the technical effects of these differences and, hence, the objective technical problem to be solved by

the claimed invention, features (a) and (c) aim at ensuring a high degree of coagulation of the elastomer latex.

In this context, it is observed that the "objects" proposed by the appellant are of a general nature, but do not take the teaching of document D10 and the technical effects of the distinguishing features into account.

1.3 Obviousness of the claimed solution

Turning to the obviousness of the claimed solution, the teaching of document D10 is directed to the compounding of carbon black as a filler with elastomer latex. In particular, it suggests that *"carbon black is continuously added, at a uniformly controlled rate, to a stream of water and mixed therewith [...] by subjecting the black to hydraulic impact and agitation and, while continuing the agitation of the stream to keep the black in uniform suspension, suddenly combining the stream of the resultant carbon black slurry with a stream of the rubber latex, so as to effect substantially instantaneously uniform mixing of the two streams, and continuing to agitate the mixture until coagulation has been effected."* (cf. page 1, line 89, to page 2, line 12). Document D10 places particular emphasis on the energy input during the step of mixing the two streams (cf. page 2, lines 40 to 46: *"The mixing of the resultant aqueous suspension of the black with the latex is, with advantage, effected either by violent impact of the stream of carbon black suspension with a stream of latex or by violent mechanical agitation."*; page 2, lines 51 to 56: *"We then passed the resultant slurry stream to a second eductor, in which the latex was the energizing fluid, and the black*

was thereby continuously, instantaneously and uniformly mixed with the latex."; page 2, lines 64 to 68: *"We then immediately mixed the resultant stream of slurry with a high velocity stream of latex, effecting substantially instantaneous and uniform intermingling of the two streams."*; underlining added by the board). Document D10 mentions positive effects on coagulation as one of the advantages of the suggested mixing process (cf. page 2, lines 101 to 105). In view of this teaching, it is obvious to the skilled person that a high input of mixing energy is beneficial for achieving a high degree of coagulation of the elastomer latex with the particulate filler. Moreover, according to document D10 (page 2, lines 105 to 110), the serum is substantially clear after coagulation, which means not only that all the carbon black is taken up by the coagulated polymer, but also that coagulation is *"substantially complete"* as stated in feature (c).

Furthermore, in view of claim 6 of document D10, according to which the filler suspension flows through a conduit as a turbulent stream and is then uniformly mixed with a stream of the rubber latex, wherein agitation of the mixture is continued until coagulation has been effected, no inventive step is required for generally defining an elongate coagulum zone extending from a mixing zone to a discharge end according to feature (a).

With respect to the appellant's arguments it is added that the contested claim is silent on the use of coagulating agents. The fact that a further document D10-1 by the same inventor discloses a coagulating tank does not, in itself, alter the content of document D10 and its teaching to the skilled person at the relevant date of the opposed patent.

1.4 For these reasons, the subject-matter of claim 1 of the main request is not based on an inventive step, Article 56 EPC 1973.

2. Admissibility of the newly filed auxiliary requests

2.1 Together with the statement setting out its grounds of appeal the appellant first filed *inter alia* the current first, second and third auxiliary requests.

2.2 With regard to the admissibility of these requests, reference is made to Article 12(4) RPBA, which stipulates that the board is to take into account everything presented by the parties under Article 12(1) RPBA, if and to the extent it relates to the case and meets the requirements of Article 12(2) RPBA. However, Article 12(4) RPBA expressly gives the board discretion as to the non-admission of facts, evidence or requests which could already have been submitted in the first-instance proceedings or which were not admitted there. A late submission may be justified if it was not already occasioned in the first-instance proceedings but is an appropriate and immediate reaction to events in the final stage of the proceedings before the department of first instance or to findings in the contested decision.

2.3 Turning to the case at hand, in the annex to the summons the opposition division provisionally considered the subject-matter of the product claims to be sufficiently disclosed for it to be carried out by a skilled person, while it refrained from giving a preliminary opinion on inventive step. In the light of discussions during the oral proceedings, the opposition division changed its view on the issue of Article

100(b) EPC 1973 and finally decided that the disclosure of the subject-matter of product claims 7 and 8 in the patent was insufficient. On inventive step, it concluded that the subject-matter of independent claim 1 of the then first auxiliary request was not based on an inventive step. In view of these developments during the final stage of the opposition proceedings, it is not, from an objective point of view, apparent that the appellant had good reason to already file the present first to third auxiliary requests during the opposition proceedings. Rather, their submission together with the statement setting out the grounds of appeal may be considered an appropriate and timely response to the contested decision. In these circumstances, the board does not consider the first to third auxiliary requests to be inadmissible under Article 12(4) RPBA. Moreover, their admissibility is not contested by the respondent. For these reasons, they are to be taken into account in the present appeal proceedings.

3. First auxiliary request, claim 1 - added subject-matter

3.1 Compared with the main request, claim 1 of the first auxiliary request contains the additional features of the first fluid being fed to the mixing zone at a line pressure of less than 69.0 kPa (gauge) (10 psig) and of the second fluid being fed to the mixing zone at a pressure above 2668 kPa (gauge) (300 psig). The appellant indicates the passages on page 16, lines 11 to 13, and page 29, lines 12 and 13, as a basis for this amendment.

3.2 The board notes that the added pressure value of less than 69.0 kPa (gauge) (10 psig) for the first fluid is originally disclosed in a part of the description relating to Figure 1 (page 16, lines 11 to 13). In the

context of this embodiment, the pressure of the second fluid at the exit of the homogeniser (i.e. before the mixing step) is said to be at about 600 psi or more (cf. page 22, lines 10 and 11). Regarding the pressure of the second fluid being above 2668 kPa (gauge) (300 psig), it is observed that this value is taken from a passage relating to Figure 4. The board concludes that the two numerical values added to claim 1 were originally disclosed in the description of the application as filed in two separate contexts. Their combination in present claim 1 of the first auxiliary request thus goes beyond the original disclosure of the application as originally filed, contrary to the provisions of Article 123(2) EPC.

4. Second auxiliary request – sufficiency of disclosure in respect of claims 7 and 8

4.1 The set of claims of the then third auxiliary request, which the opposition division considered allowable, consists in substance of claims 1 to 6 of the current second auxiliary request. Since the patent proprietor is the sole appellant, the principle of prohibition of *reformatio in peius* (cf. G 9/92, OJ EPO 1994, 875) applies to these claims. Consequently, they are not open to review by the board of appeal in the present proceedings.

4.2 However, in the context of the then second auxiliary request, the opposition division also decided that product claims 7 and 8 were not sufficiently disclosed in the patent in order to be carried out by the person skilled in the art, in particular with regard to the method for measuring the claimed macro-dispersion (cf. impugned decision, Reasons 4.6).

4.3 In that respect, the board shares the respondent's opinion that the relevant question under Article 100(b) EPC 1973 is whether or not the skilled person is able to produce an elastomer composite comprising a particulate filler dispersed in the elastomer with a macro-dispersion of the particulate filler in the elastomer composite as required by claims 7 and 8, i.e. of less than 0.2% undispersed area. It is uncontested that the patent specification as whole, and in particular paragraphs [0011] to [0122] of the description, the equipment disclosed in Figures 1 to 7 and the results of the examples shown in Figures 8 to 31, are sufficient to identify the technical measures necessary to produce the elastomer composite of claims 7 and 8. The parties' dispute hinges on whether or not there is sufficient information on how to then reliably measure the macro-dispersion in the resulting composition, which is defined in claims 7 and 8. However, in view of the fact that the numerical value of the macro-dispersion is not a process parameter needed for the preparation of the elastomer composite, this aspect concerns the clarity of the definition of the scope of protection, i.e. the possible uncertainty over whether a produced elastomer composite falls under the claims, rather than the skilled person's ability to actually produce the claimed elastomer composite on the basis of his knowledge and the information given in the patent.

It may be added that, when looking for a method of measuring the macro-dispersion D(%) of the particulate filler in the elastomer composite, wherein measuring macro-dispersion involves measuring defects on a surface generated by microtoming, extrusion or cutting, the skilled person would consult the description of the

contested patent and find the following general information:

"[0007] A commercial image analyzer such as the IBAS Compact model image analyzer available from Kontron Electronik GmbH (Munich, Germany) can be used to measure macro-dispersion of carbon black or other filler. Typically, in quantitative macro-dispersion tests used in the rubber industry, the critical cut-off size is 10 microns. Defects larger than about 10 microns in size typically consist of undispersed black or other filler, as well as any grit or other contaminants, which can affect both visual and functional performance. Thus, measuring macro-dispersion involves measuring defects on a surface (generated by microtoming, extrusion or cutting) greater than 10 microns in size by total area of such defects per unit area examined using an image analysis procedure. Macro-dispersion D(%) is calculated as follows:

$$\text{\% Undispersed area (\%)} = \frac{1}{A_m}\sum_{i=1}^{m} N_i \frac{\pi D_i^2}{4}$$

where
A_m = Total sample surface area examined
N_i = Number of defects with size D_i
D_i = Diameter of circle having the same area as that of the defect (equivalent circle diameter).
m = number of images"

In paragraph [0020], the description further states that the above method is applied to measure the level of macro-dispersion in the context of the present invention:

"[0020] In accordance with this aspect [macro-dispersion D(%)], novel elastomer composites are provided, preferably comprising a particulate filler dispersed in natural rubber, the macro-dispersion level of the filler in the elastomer composite preferably being less than about 0.2% undispersed area, more preferably less than about 0.1% undispersed area. Consistent with the discussion above, macro-dispersion here means the macro-dispersion D(%) of the carbon black measured as percent undispersed area for defects larger than 10 microns."

In view of these instructions, the skilled person would be able to establish the claimed macro-dispersion parameter. The sufficiency of this disclosure is not altered by the statement in paragraph [0060], point 5, which the opposition division and the respondent relied upon:

"5. Dispersion: The Cabot Dispersion Chart method is used with subjective evaluation 0/50 x optical micrographs. (ASTM D2663 method)."

It is common ground between the opposition division and both parties that the Cabot Dispersion Chart method essentially corresponds to method A of ASTM D2663, which explains the reference to this standard in the context of the Cabot Dispersion Chart method. It is also common ground that the skilled person would immediately exclude this method, because it is a qualitative method and, as such, not suitable for measuring the claimed macro-dispersion D(%). Even if the skilled person went a step further, consulted ASTM D2663 and realised that it contained two further quantitative methods B and C, he would realise that

these methods do not measure the defects on a particular surface, as required in claims 7 and 8, but the area covered by black agglomerates. Consequently, methods B and C too are, as such, not appropriate for measuring the claimed macro-dispersion D(%) as defined in claims 7 and 8, thereby leaving the method explained in detail in paragraphs [0007] and [0020] as the only option.

The board concludes that the disclosure in the contested patent, considering its specification as a whole, is sufficient not only for producing the claimed elastomer composite, but also for measuring the claimed macro-dispersion D(%) on the finished product.

4.4 Based on these considerations, the board does not concur with the objections raised by the respondent against the present second auxiliary request under Article 100(b) EPC 1973.

5. *Remittal to the department of first instance*

5.1 Both parties request that the case be remitted to the opposition division for consideration of novelty and inventive step in respect of the subject-matter of claims 7 and 8 of the second auxiliary request.

5.2 Under Article 111(1) EPC 1973 the board of appeal may either itself decide on the appeal or remit the case to the department which was responsible for the decision appealed. The appropriateness of remittal to the department of first instance is decided by the board on the merits of the particular case. Even if there is no absolute right to have every issue decided upon by two instances, it is the primary function of an appeal to give the losing party the possibility of having the

correctness of the first-instance decision judicially reviewed. Further criteria which can also be taken into account when deciding on a remittal include the parties' requests, the general interest in having proceedings brought to a close within an appropriate period of time, and whether or not there has been a comprehensive assessment of the case during the first-instance proceedings.

5.3 Regarding product claims 7 and 8, the opposition division ruled only on the issue of sufficiency of disclosure and did not consider the further questions of novelty and inventive step. In view of that, the board finds it appropriate to allow the requests for remittal of the case to the department of first instance for a decision on novelty and inventive step in respect of the subject-matter of claims 7 and 8.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance for further prosecution.

The Registrar: The Chairman:

K. Boelicke M. Poock

Decision electronically authenticated