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**Datasheet for the decision
of 18 April 2016**

Case Number: T 1496/13 - 3.3.06

Application Number: 06759836.7

Publication Number: 1907485

IPC: C09C1/56, C08K3/04

Language of the proceedings: EN

Title of invention:

CARBON BLACKS AND POLYMERS CONTAINING THE SAME

Patent Proprietor:

Cabot Corporation

Opponent:

Orion Engineered Carbons GmbH

Headword:

Jetness/CABOT

Relevant legal provisions:

EPC Art. 123(3), 83, 52(1), 56

Keyword:

Amendments - extension of the protection conferred (no)
Sufficiency of disclosure - (yes)
Inventive step (yes) - non-obvious modified product

Decisions cited:

T 2017/07

Catchword:



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Case Number: T 1496/13 - 3.3.06

D E C I S I O N
of Technical Board of Appeal 3.3.06
of 18 April 2016

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Decision under appeal: **Interlocutory decision of the Opposition
Division of the European Patent Office posted on
25 April 2013 concerning maintenance of the
European Patent No. 1907485 in amended form.**

Composition of the Board:

Chairman B. Czech
Members: E. Bendl
J. Geschwind

Summary of Facts and Submissions

I. The appeal by the opponent lies from the interlocutory decision of the opposition division concerning maintenance of the European patent No. 1 907 485 in amended form.

The patent had been opposed on the grounds of Article 100(a) (lack of novelty and lack of inventive step) and 100(b) (insufficiency of the disclosure).

The evidence cited in the course of the proceedings includes the following documents:

- D2: "Raven Russe", Product Information brochure, Columbian Chemicals Co., 1999; six pages,
- D4: "Schriftenreihe Pigmente", Degussa-Hüls AG, bearing the indication "899"; pages 1 to 33;
- D5: J.-B. Donnet et al., "Carbon Black", 2nd ed., 1993, Marcel Dekker Inc. New York; pages 36 to 37 and 124;
- D14: Instruction Manual "DVS Analysis Suite v3.6 (Advanced)"; Surface measurement Systems Ltd UK, 27 November 2000;
- D15: Levoguer C. L. et al., "Measurement of the Surface Energies of Pharmaceutical Powders using a Novel Vapour Adsorption Method"; Dynamic Vapour Sorption - Application Note 17; Surface Measurements Systems,; pages 1 to 11; and
- D6 - D8, D10:
Documents filed as proof of the prior use of a carbon black designated as "Printex 95".

II. Claims 1, 20, 22 and 25 to 28 according to the amended set of claims (then pending as first auxiliary request) held allowable by the opposition division read as follows (amendments made to the corresponding claims as granted made apparent by the board):

"1. Carbon black comprising the following three characteristics:

(a) an Iodine number of from 150 to 600 mg/g (ASTM D1510);

(b) a DBP absorption of from 40 to 90 cc/100g, (ASTM D2414);

*(c) a ratio of nitrogen surface area/statistical thickness surface area of from ~~1,25~~ **1.40** to 1.70 ASTM 06556;*

and said carbon black has one or more of the following additional properties:

(d) a jetness value as determined by Terlon L of 1.7 or less (measured as described in the description); and/or*

(e) a water spreading pressure value of 23.0 mJ/m² or less (measured as described in the description)."

"20. An ABS compound comprising ABS and at least one carbon black of claim 1."

"22. A polymer compound comprising at least one polymer and at least one carbon black of claim 1."

"25. The ABS compound of claim 20, wherein said carbon black is present in an amount of from 0.5% to 10wt% [sic] by weight of the ABS compound."

"26. The polymer compound of claim 22, wherein said carbon black is present in an amount of from 0.5 wt% to 10wt% from the weight of the ABS compound."

"27. A polymer masterbatch or concentrate comprising at least one polymer and the carbon black of claim 1, wherein said carbon black is present in an amount of from 10 wt% to 50 wt% based on the overall weight of the polymer masterbatch or concentrate."

"28. A polymer masterbatch or concentrate comprising at least one polymer and the carbon black of claim 13, wherein said carbon black is present in an amount of from 10 wt% to 50 wt% based on the overall weight of the polymer masterbatch or concentrate."

Dependent claims 2 to 19 and 29 concern more preferred embodiments of the carbon black according to claim 1.

Claims 21, 23, 24 are directed to more specific ABS compounds comprising ABS and carbon black as claimed.

III. In the appealed decision the opposition division concluded in particular that the claimed invention (first auxiliary request) was sufficiently disclosed, novel over the cited prior art and also involved an inventive step taking the carbon black "Printex 95" (prior use) as the closest prior art.

Document D4, filed with notice of opposition, was not admitted into the proceedings, apparently because the opponent failed to provide evidence regarding its publication date before the expiry of a time limit set by the opposition division (pursuant to Rule 116(1) EPC).

IV. In its statement of grounds, the appellant (opponent) maintained *inter alia* that the claimed invention was insufficiently disclosed and lacked an inventive step taking the carbon black mentioned as "CB 'X'" in the

patent in suit as the closest prior art, considering also documents D2, D4 and D5.

It insisted that D4 had to be admitted and considered, since it had been filed during the opposition period. It (re-)submitted a copy (with two pages in original size) as well as the following document, supposed to prove that the company name "Degussa Hüls AG", printed on D4, existed only between 1999 and 2001:

D16: Print-out (two pages) "Degussa - Aktuelles - <http://www.degussa-huels.de/index.html> - © 2009".

Concerning the availability and nature of "Terlon #1 oil", it submitted document

D17: Email of Mr. Rockstein, dated 28 August 2013.

- V. The respondent (patent proprietor) requested an extension of the time limit for replying to the Appellant's statement of grounds.

This request was refused by the board in its communication dated 4 February 2014 on the ground that it was insufficiently reasoned.

- VI. After expiry of the (non-extended time limit), the respondent filed a full reply on 12 February 2014, in which it defended the patent in the amended form held allowable by the opposition division (main request), rebutting all the objections of appellant. Nevertheless, it also filed three sets of claims as auxiliary requests 1 to 3. Moreover, in support of its arguments regarding sufficiency ("*water spreading pressure*") it filed document

DM: A declaration by Mr G. D. Moeser.

In respect of inventive step, it submitted that Printex 95", and not "CB X", had to be considered as the closest prior art.

In a subsequent letter, it re-filed declaration DM, dated and signed by Mr. Moeser.

- VII. In a further letter, the appellant requested the non-admittance of the respondent's belated reply including the three auxiliary claim requests and document DM. It maintained its objections regarding sufficiency and inventive step, and extended them to the claims of the auxiliary requests. It also raised objections under Article 123(2) and Rule 80 EPC against the auxiliary requests.
- VIII. In preparation for the oral proceedings, the board issued a communication addressing salient issues of the case (sufficiency, inventive step) and expressing *inter alia* why it was inclined to admit D4 and the respondent's reply to the statement of grounds into the proceedings. The board also called into question the compliance of the claims with Article 123(3) EPC with reference to decision 2017/07 of 26 November 2009.
- IX. In a further letter, the respondent indicated why it considered its reply of 12 February 2012 to be admissible, rebutted the pending objections regarding sufficiency and inventive step and provided arguments regarding the compliance of the amended claims with Article 123(3) EPC. It also filed further sets of amended claims as auxiliary requests 4 to 11.
- X. The appellant also filed a further letter in which it upheld its previous objections, providing further arguments, and indicated why it considered claims 25 to

28 of the main request (*inter alia*) were objectionable under Article 123(3) EPC.

XI. Oral proceedings took place on 18 April 2016.

XII. The final requests of the parties were as follows:

The **appellant** (opponent) requested that decision under appeal be set aside and the patent be revoked.

The **respondent** (patent proprietor) requested that the appeal be dismissed (main request) or, in the alternative, that the patent be maintained on the basis of any of the sets of claims of auxiliary requests 1 to 3 filed with letter of 12 February 2014, or, auxiliary requests 4 to 11 filed with letter of 2 March 2016.

XIII. The arguments of the **appellant**, presented in writing and/or at the oral proceedings, as far as relevant to the present decision, can be summarised as follows:

Admissibility of D4

The opposition division's decision not to admit D4 was legally unjustified, as the document was submitted within the period defined in Article 99 EPC. Therefore, this disclosure could at most not have been taken into account. However, D16 clearly showed that D4 must have been publically available between 1999 and 2001. Reference was also made to the printing date indicated on "899", i.e. "August 1999". Therefore, D4 had to be admitted into the proceedings.

Non-admissibility of the respondent's belated reply to the statement of grounds

The respondent's reply to the statement of grounds was only filed three weeks after the expiry (on 20 January 2014) of the time limit set, and the signed declaration even later. The reply, including all attachments thereof, and the signed declaration should thus not be admitted into the proceedings.

Main request - compliance with Article 123(3) EPC

Based on the rationale of T 2017/07, claims 25 to 28 at issue, directed to compositions with an open definition ("*comprising*"), but also containing a limitation of the relative amount of one component, i.e. carbon black according to claim 1 at issue, were objectionable under Article 123(3) EPC due to the amendment made to claim 1 (jetness range of from **1.25** to 1.70 in claim 1 as granted restricted to from **1.40** to 1.70 in claim 1 of the main request). By virtue of this amendment, the limitation of the amount of carbon black "*according to claim 1*" (as granted) that could be present in the claimed compositions was lifted, insofar as the relative amount of carbon blacks with a jetness of e.g. 1.30 that could be contained in the compositions now claimed (claims 25 to 28 at issue) was no longer limited (as in corresponding claims 27 to 30 as granted).

Sufficiency of disclosure

The skilled person was not able to carry out the invention because the Terlon #1 oil necessary for the determination of the "*jetness value L**" of the carbon black was no longer available, or at least not in the

same composition as on the effective filing date of the patent in suit, as confirmed by D17.

Moreover, it argued that the "*water spreading pressure*" value of a carbon black could not be unambiguously determined based on the teaching given in the patent.

Inventive step

The carbon black CB "X" mentioned in the patent was the closest prior art, as it differed from the carbon black claimed only in terms of its ratio of nitrogen surface area to statistical thickness area ("**N2SA/STSA ratio**" hereinafter). Since no effect was shown which could be attributed to this difference, the claimed subject-matter did not involve an inventive step, in particular taking also in account the teachings of D2, D4 and D5.

The relevant counter-arguments of the **respondent** can be summarised as follows:

Admissibility of the reply to the statement of grounds

In view of the relevant case law, it could reasonably be assumed that the reasons given in substantiation of the request for extension would be accepted. All efforts were made to file a timely response. The request for extension of time was not an intended abuse of the proceedings but was due to the clarification of some open questions. No delay had occurred in the appeal proceedings.

Main request - compliance with Article 123(3) EPC

T 2017/07 was not applicable, since in the case underlying this decision the broadest claim was directed

to a composition comprising one specific component in an amount defined by a numerical range. However, in assessing compliance with Article 123(3) EPC, the patent as granted, and in particular the claims, had to be considered as a whole.

Sufficiency of disclosure

"Terlon #1" oil as required for determining the "jetness value" was still available on the market. The slight changes in the formulation that occurred after the effective filing date of the patent in suit did not have an impact on the measured results, as confirmed by D17.

Measuring the "water spreading pressure" value involved water adsorption on the carbon black surface, including its accessible inner pore surfaces, but not absorption of water into the carbon. In this connection reference was made to D14, D15 and DM.

Inventive step

CB "X" could not be considered as the closest prior art. Instead, the carbon black commercialised as "Printex 95" had to be taken as the starting point in assessing inventive step. But even considering CB "X" as the closest prior art, and also D5, a document advising on how to influence the properties of carbon black by means of modifications of its production process, it would not have been obvious to the skilled person to provide a carbon black as claimed in order to achieve the desired balance of properties

Reasons for the Decision

Admissibility issues

1. Document D4

A hard-copy of D4 had already been submitted with the statement of grounds for opposition. The opponent/appellant did not dispute that D4 was had been made available to the public, but pointed out that it had not been established **when** this had happened.

The opposition division decided not to admit D4 into the proceedings because the opponent did not establish the publication date within a time limit set.

1.1 As foreshadowed in the communication issued in preparation of the oral proceedings, the board holds that the opposition division applied an excessively strict approach in not admitting D4, as the document as such was *de facto* submitted in time, together with the grounds for opposition. What would possibly have been justified was not to consider D4 as prior art because its publication date had not been established in time.

1.2 For the board, the respondent's statement made before the opposition division that D4 was published prior to priority date of the patent in suit is proven to be correct in view of document D16 filed at the appeal stage: Indeed, D16 demonstrates that the "Degussa-Hüls AG" only existed between 1999 and 2001. As this name appears on the cover of D4, the board has no doubts that the publication must have taken place within this time span, i.e. before the priority date claimed by the patent in suit (17 May 2005). This was not disputed by the appellant. Moreover, this finding is also in

accordance with the indication "899", printed on the cover page of D4, which under the circumstances can safely be assumed to designate August 1999.

1.3 Thus, considering that D4 was filed at the very beginning of the opposition procedure and that D16 establishes publication date of D4, the board decided to overrule the discretionary decision of the opposition division by admitting D16 and, consequently, D4 into the proceedings (Article 114(2) EPC) and to consider the latter's relevant content.

2. Respondent's reply to the statement of grounds

2.1 In the present case, the board, considering the lack of a sufficient justification, took the discretionary decision not to grant the extension of the time limit set for replying to the statement of grounds of appeal, as requested by the Respondent (Article 12(5) RPBA).

2.2 A few days after the posting date of the board's communication indicating the rejection of said request, the Respondent submitted its reply to the statement of grounds of appeal.

2.3 The admission of late submissions is, in any case, subject to the discretion of the board (Article 114(2) EPC and Article 12(4) RPBA).

2.3.1 In the exercise of this discretion the board took into account in particular that the respondent reacted promptly to the refusal of the time extension request.

Furthermore, the board took into account that the Respondent's complete reply was submitted at a quite early stage of the appeal proceedings, and that it

essentially comprises arguments in defence of the patent in the version allowed by the opposition division against the objections raised by the Appellant, and in defence of claim requests that had already been pending before the opposition division as auxiliary requests 1 to 3.

- 2.3.2 Taking into account all of the above aspects, the board saw no reason for disregarding the argumentation contained in said reply and decided that this arguments were admissible into the proceedings (Article 114(2) EPC and Article 12 RPBA), as foreshadowed in the board's communication.

As regards the admissibility of auxiliary claim requests 1 to 3 and the declaration DM, no decision needed to be taken (*infra*).

Main request - allowability of the amendments

3. Article 123(3) EPC

- 3.1 Claims 27 to 30 as granted are directed to material compositions, i.e an "ABS compound", a "polymer compound" or a "polymer masterbatch or concentrate", respectively, comprising carbon black as defined in claim 1 granted (or in claim granted 15 dependent on claim 1).

- 3.2 The Appellant submitted that claims 25 to 28 at issue, (wording under II, *supra*, corresponding, respectively, to claims 27 to 30 as granted, were objectionable under Article 123(3) EPC in view of the amendment made in claim 1 (lower limit of the N2SA/STSA ratio range increased from 1.25 to 1.40) for the following reasons:

Each of the claims in question comprised a quantitative limitation (in terms of a weight-% range) of the claimed material's content in carbon black as defined in claim 1 (or 13), said quantitative limitation being already present in the corresponding claims as granted. Due to the open formulation of claims 25 to 28 at issue ("*comprising at least ...*") and the amendment made to claim 1, said quantitative limitation is, however, lifted as regards a possible content of the claimed compositions in carbon black meeting all the specifications of claim 1 as amended but having an N2SA/STSA ratio in the range of from 1.25 to almost 1.40. Since such a carbon black could be included in unlimited amounts in materials according to claims 25 to 28 issue, the protection conferred by these claims is extended compared to the protection conferred by claims 27 to 30 as granted. The rationale of decision T 2017/07 was invoked in this respect.

3.3 However, as pointed out by the Respondent, the patent as a whole is to be considered when assessing compliance of post-grant amendments with Article 123(3) EPC. In particular, the scope of the claims as a whole is to be considered in this respect.

3.4 For the board, claim 24 as granted, directed to a "*polymer compound comprising at least one polymer and at least one carbon black of claim 1*" confers the broadest protection in terms of a material, which is a composition in the broadest sense, "*comprising*" polymer as well as carbon black according to the broadest definition provided by claim 1 as granted (i.e. with an N2SA/STSA ratio in the range of from 1.25 to 1.70). Claim 24 as granted contains, however, no quantitative limitation whatsoever regarding the composition's

relative content in carbon black according to the invention.

- 3.4.1 Therefore, for the board, even a composition ("*polymer compound*", "*ABS compound*" or "*polymer masterbatch or concentrate*")
- meeting the limitations implied by the wording of any of claims 25 to 28 at issue and of amended claim 1 (N2SA/STSA from 1.40 to 1.70),
 - but comprising additionally, for instance, substantial additional amounts of a carbon black having the properties of claim 1 as granted but a N2SA/STSA ratio in the range of from 1.25 to almost 1.40,
 - thereby bringing the total relative amount of carbon black to a level beyond the upper limit specified in claims 25 to 28 at issue,
- falls under the protection afforded by claim 24 as granted, referring back to claim 1 as granted as regards the carbon black to be included in the composition.
- 3.4.2 Decision T 2017/07 concerned a case wherein the broadest claim of the patent as granted was directed to a composition which was limited in terms of the relative amount of one of its component. Since in the present case, the broadest granted claim to a composition (claim 24) does not comprise such a limitation regarding the amount of carbon black(s), the rationale of T 2017/07 is not applicable.
- 3.5 Thus, in the board's judgement, the amended set of claims according to the respondent's main request is not objectionable under Article 123(3) EPC.

4. Other formal requirements concerning the amendments

No objections were raised under Article 123(2) or 84 EPC, or Rule 80 EPC. The board has no reason to take a different stance in this respect. More particularly, the N2SA/STSA range of from 1.40 to 1.70 is an express feature of dependent claim 9 of the application as filed (and of the patent as granted).

Main request - Sufficiency of disclosure

5. "Jetness" value "L*", "as determined by Terlon"

5.1 The appellant pointed out that Terlon #1 oil, necessary for determining the jetness value L*, was no longer commercially available. The oil later commercialised under this trade name was different from the one available at the priority date of the patent in suit, as evidenced by the statements of Mr Bainbridge (R&D Manager of the company producing Terlon 1) in the email D17, which read as follows (emphasis added by the board):

"The **basic components** of Terlon 1 have **remained constant between the 2006 and today**. We have changed manufacturing locations and so a **slight formula modification** was necessary to align with their production capabilities/procedures. These **changes were very slight** and **do not change the chemistry or performance** of the product."

Therefore, according to the appellant, any measurement of the jetness value L* carried out with the modified Terlon 1 oil (feature (d) of claim 1) would lead, due to changes in the composition of the oil, to different results, as compared to those that would have been

obtained when carrying out the measurements with the Terlon #1 oil available around the effective filing date of the patent in suit. Therefore the patent was insufficiently disclosed.

- 5.2 The board cannot accept this argument. According to D17 the "basic components" of Terlon #1 "remained constant" over the relevant period of time, and "only a slight formula modification" had become necessary for reasons related to the production of the oil. It is emphasized in D17 that the "changes were very slight and do not change the chemistry or performance of the product".

Based on the information provided by D17, and considering the lack of proof to the contrary, the board accepts that the said minor modifications of Terlon #1 oil would not necessarily have a significant impact on the jetness values measured using the more recent formulation of Terlon 1, as compared to the values that would be obtained using the original formulation of this oil.

- 5.3 The appellant also argued that a comparison with the original Terlon #1 oil was not possible, as the latter was not available any more. The board holds, however, that it would have been possible to rework the examples on file, to measure the L^* values using the present-day, modified Terlon #1 oil and to compare the results obtained with the data given in the patent in suit, in order to verify whether there was a significant variance in the results (amounting to a lack of clarity at the boundaries of the claim), let alone a variance of such an order of magnitude that the claimed invention would have to be considered as being insufficiently disclosed. However, no such attempt was made by the appellant.

5.4 The board thus holds that the appellant did not discharge the burden of proving its assertion that due to varying results in terms of L^* values, caused by using the present-day Terlon 1 oil instead of the original oil, the patent was insufficiently disclosed.

6. "Water spreading pressure" value

6.1 According to the appellant, the "water spreading pressure" value (feature (e) of claim 1) could not be determined, as the method indicated in paragraph [0022] of the patent in suit was not suitable for carbon black. It argued in particular that, according to the "DVS analysis suite instruction manual" D14, page 9, which referred to document D15 as regards the theoretical and experimental background of such measurements, the skilled person had to make sure that no absorption of water vapour, but only adsorption took place (D15, page 6, last sentence). It furthermore argued that according to the method described in the patent in suit no equilibration was performed, so that no complete (correct) teaching was contained in the patent in suit as regards the measuring of the parameter value in question.

6.2 The appellant did not, however, corroborate its arguments and the theoretical explanations provided in this respect by any evidence actually showing that an exact reproduction of the DVS (dynamic water sorption) method described in paragraph [0022] would not, irrespectively of whether or not the described processing conditions were sufficient to create an equilibrium, lead to meaningful and reproducible results in terms of the water spreading pressure value.

- 6.3 The board thus holds that the appellant's second sufficiency objection is not convincing either.
7. Hence, in the board's judgement, the claimed invention is disclosed in the patent in suit in a manner sufficiently clear and complete for it to be carried out by a person skilled in the art. The patent in the amended version held allowable by the opposition division is thus not objectionable on the grounds of of Article 83 EPC.

Main request - Novelty

8. The board is satisfied that prior art invoked by the appellant does not directly and unambiguously disclose a carbon black with all the features/properties recited in claim 1. Since no objection was raised in this respect, there is no need for more detailed reasons in this respect.

Thus, the claimed subject-matter is not objectionable for lack of novelty (Articles 52(1) and 54 EPC).

Main request - Inventive step

9. The invention
- 9.1 The invention concerns carbon black having specific properties (claims 1 to 19 and 29), and to compositions ("*ABS compound*", "*polymer compound*" and "*polymer masterbatch or concentrate*") comprising such carbon black (claims 20 to 28) comprising such carbon black.
- 9.2 According to paragraphs [0003] and [0004], the carbon black of the invention provides "*equal colour in polymer compounds at a lower loading*", and at the same

time has an *"acceptable balance of properties"*.

10. The closest prior art

10.1 For the board, the carbon black referred to in the patent and designated as "CB 'X'" is the most appropriate starting point for the assessment of inventive step according to the problem-solution-approach. This was also the view taken by the appellant.

10.2 According to the patent in suit, CB "X" designates a carbon black produced and commercialised by the company Cabot (patent proprietor) before the effective filing date of the patent in suit. This was not in dispute. CB "X" and some of its relevant properties are referred to in the examples of the patent in suit (see paragraph [0072] and table 1).

CB "X" meets the criteria of features (a), (b), (e) and (d), but has an N2SA/STSA ratio outside the range of from 1.40 to 1.70 prescribed by claim 1 feature (c).

However, the patent contains no details regarding the method for its production. None of the other documents relating to the prior art comprises further information regarding this carbon black.

11. The technical problem

It can be gathered from the patent in suit (e.g. paragraphs [0003] and [0004]) the technical problem to be solved, also in the light of the closest prior art (carbon black CB "X"), consisted in providing a carbon black that provides comparable colour (jetness) at lower loadings when compounded in a polymer

(performance data), while maintaining mechanical properties such as impact strength of the compound within acceptable limits.

12. The solution proposed

As solution to the above problem the patent in suit in the amended version according to the pending main request proposes the carbon black according to claim 1, which is characterised in particular in that it exhibits a specific combination of properties, expressed by features (a) to (e) (see wording under point III, *supra*).

Success of the solution

13. Assessment of the data given in the patent

13.1 Table 1 on page 10 of the patent demonstrates that carbon blacks as claimed (samples "A", "B" and "C")
- show "Terlon L*" values of from 0.87 to 1.10) which are significantly lower (better) compared to the value for CB "X" (1.40),
- show L* values, when compounded at 0.5%, comparable to those obtainable with CB "X" compounded at 0.75%,
- but nevertheless display notched impact strength, non-notched impact strength values at 0.5% comparable to those obtained with CB "X" at 0.5%, as well as (at least) comparable dispersability ratings.

13.1.1 The appellant argued that these data were not comparable, as CB "X" differed from CB "A" to CB "C" not only in terms of its lower N2SA/STSA ratio, but also terms of its lower iodine number and the higher Terlon L* value.

However, the latter two values for CB "X" range within the limits defined by claim 1. The board considers convincing the respondent's argument that it is technically not possible to change only one of the parameters indicated in claim 1 without also influencing at least some of the other parameters, which was not disputed by the appellant.

13.2 The board sees no reason for calling into question that performance data as given for the carbon blacks "A", "B" and "C" according to the invention would not be achievable across the full breadth of claim 1. Thus, the board accepts that the comparative data reported in the patent demonstrate that carbon blacks with the properties specified in claim 1 indeed solve the technical problem posed.

14. Obviousness

14.1 CB "X" is a commercial product of unknown trade name. Considering that the product was available to the public, a skilled person could get hold of a sample and determine some of its intrinsic properties and even performance data.

14.2 The board is not convinced, however, that a skilled person in possession of a sample of this carbon black could, based on common general knowledge and without the benefit of hindsight, find out without undue burden exactly how this carbon black was produced and which properties would need to be modified, and by which changes to the preparation process, in order to obtain a carbon black solving the technical problem posed and having the properties defined in claim 1.

14.2.1 More particularly, when aiming to provide a carbon black with improved application properties (performance data) as compared to the carbon black CB "X", the properties of the latter material would have to be analysed first. Then, the skilled person would need to identify which properties of the carbon black itself could and/or should be improved in order to achieve the aimed for improved performance of the carbon black when compounded in polymers.

14.2.2 Confronted with the argument that no recipe for the preparation of carbon black CB "X" was available, the appellant merely stated that recipes for preparing carbon black with defined properties could be found in special libraries.

Even accepting *arguendo* that a recipe for preparing quite similar carbon black could be found without undue burden, the next step would then be to prepare such a similar carbon black and to identify those properties which should be amended (and how) in order to obtain carbon black with the aimed for balance of performance data.

14.2.3 Further tests would thus have to be carried out to find out how processing conditions needed to be modified to obtain such a carbon black.

14.3 For the board, the tasks of determining by analysis the various properties of a commercially available carbon black, trying to identify a process suitable for its production, then identifying which set of properties would have to be modified in which direction in order to achieve the aimed for balance of performance properties of the carbon black (when compounded in polymers) goes far beyond routine experimentation and

thus amount to making an invention. The result of such an extensive research programme cannot be considered to be something obvious in the light of the prior art invoked.

14.4 For the sake of completeness, the board also indicates that even accepting (*arguendo*) the appellant's argument that table 1 of the patent in suit did not convincingly demonstrate any effects achieved across the full breadth of claim 1, and that therefore the technical problem actually solved had to be redefined in a less ambitious manner as the mere provision of further, alternative carbon black, the amount of experimentation required to arrive at carbon blacks with exactly the set of properties defined in a claim 1.

14.4.1 Considering that the various properties specified in claim 1 are not independent from each other but interrelated (see 14.5, *infra*) and that no teaching pointing in a straightforward manner towards a carbon black with the set of properties according to claim 1 was made out in the documents cited as claimed, providing a carbon black as claimed starting out from CB "X" without knowing a method for its production, cannot be considered to be a trivial, routine task not requiring inventive skills.

14.4.2 More particularly, the board does not accept as sufficiently convincing the appellant's argument that the claimed invention was obvious in the light of common general knowledge and/or technical information provided by the prior art, as illustrated, for instance,

- by D2 (page 4, left-hand column and table), which suggests that a reduction of carbon black particle size

would result in higher black colour intensity, and that there is a relationship between the ratio of STSA to N[2]SA and colouring capacity ("Farbstärke") and between high DBP[A] and jetness ("Schwärze") and colouring capacity,

- by D4 (page 28, left-hand column, section "5.2 Farbtiefe") also teaching a relationship between small size of primary carbon black particles and jetness, and/or

- by D5 (page 36, middle of the page), addressing *inter alia* the impact of temperature/residence times in the production process on particle size and porosity.

15. On the basis of the above considerations and findings, the board concludes that the claimed carbon black and, hence, the claimed polymeric compositions comprising such carbon black, involve an inventive step (Articles 52(1) and 56 EPC).

Conclusion

16. The respondent's main request is thus allowable.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:



D. Magliano

B. Czech

Decision electronically authenticated