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**Datasheet for the decision
of 25 January 2013**

Case Number: T 0143/09 - 3.3.09

Application Number: 99308474.8

Publication Number: 997786

IPC: G03G 9/08

Language of the proceedings: EN

Title of invention:

Toner and two-component developer for electrophotographic process and image formation method and image formation apparatus using the toner

Patent Proprietor:

Ricoh Company, Ltd.

Opponents:

Spandern, Uwe
Bismanns H.

Headword:

-

Relevant legal provisions:

EPC Art. 56
RPBA Art. 13(3)

Keyword:

"Late-filed experimental evidence (not admitted)"
"Inventive step (no)"

Decisions cited:

-

Catchword:

-



Case Number: T 0143/09 - 3.3.09

DECISION
of the Technical Board of Appeal 3.3.09
of 25 January 2013

Appellant: Spandern, Uwe
(Opponent 1) Auf dem Dannenkamp 19
D-46395 Bocholt (DE)

Representative: Ahrens, Gabriele
Patentanwälte Einsel & Kollegen
Jasperallee 1A
D-38102 Braunschweig (DE)

Respondent: Ricoh Company, Ltd.
(Patent Proprietor) 3-6, Nakamagome 1-chome
Ohta-ku
Tokyo 143-8555 (JP)

Representative: Waldren, Robin Michael
Marks & Clerk LLP
90 Long Acre
London WC2E 9RA (GB)

Party as of right: Bismanns H.
(Opponent 2) Lauthstrasse 52
D-80999 München (DE)

Representative: Albrecht, Thomas
Kraus & Weisert
Patent- und Rechtsanwälte
Thomas-Wimmer-Ring 15
D-80539 München (DE)

Decision under appeal: Interlocutory decision of the Opposition
Division of the European Patent Office posted
10 October 2008 concerning maintenance of the
European patent No. 997786 in amended form.

Composition of the Board:

Chairman: W. Sieber
Members: M. O. Müller
R. Menapace

Summary of Facts and Submissions

I. This decision concerns the appeal by opponent I against the decision of the opposition division that European patent No. 0 997 786 as amended met the requirements of the EPC.

II. Oppositions were filed by opponent I (Spandern, U.) and opponent II (Bismanns, H.), requesting revocation of the patent in its entirety on the ground that the claimed subject-matter was neither novel nor inventive (Article 100(a) EPC)

The documents submitted during the opposition proceedings included:

D1: JP 6-83108 A (in English translation);

D8a: Determination of the D25/D75 ratio of example 1 of D1;

D12: JP 5-331215 A (in English translation); and

D16: Additional experimental data 1 and 2, filed by the proprietor with letter of 12 May 2005.

III. The opposition division's decision, announced orally on 9 September 2008 and issued in writing on 10 October 2008, was based on the claims of the proprietor's main request filed by letter of 7 August 2008, claim 1 of which reads as follows:

"1. A toner comprising:

(i) toner particles which comprise a binder resin and a colouring agent, wherein said toner particles have a weight-average particle size in a range of 6.0 to 11.5 μm , and comprise:

- toner particles (a) with a particle diameter of 5 μm or less in a content ratio of 1 to 15% by number, and
- toner particles (b) with a particle diameter of twice or more said weight-average particle size in a content ratio of 5 wt% or less, and

satisfy the conditions that:

a number-average particle size D25 when the cumulative number of said toner particles reaches 25% at the measurement of a cumulative particle distribution by number thereof, and a number-average particle size D75 when the cumulative number of said toner particles reaches 75% at the measurement of a cumulative particle distribution by number thereof are in the relationship of:

$$0.70 \leq D25/D75 \leq 0.85, \text{ and}$$

(ii) hydrophobic silica particles."

IV. In its decision, the opposition division essentially reasoned as follows:

The subject-matter of the main request was novel in view of D1, which did not disclose the claimed D25/D75 ratio.

The subject-matter of the main request was also inventive in view of D1 as the closest prior art. When formulating the objective technical problem, the problem of improved transfer rate could not be taken into account as this problem was not closely technically related to the originally filed problems of image fixing, contamination and abrasion performance. Further, the problem of improving image granularity could not be taken into account either, as this problem was not closely related to the originally disclosed problems of image resolution and image density. In this respect, the originally disclosed problems with regard to fine line images and evenness of images were clearly directed to the amount of particles (b) in claim 1 rather than to the distinguishing feature with regard to D1, ie the D25/D75 ratio. Therefore, the objective technical problem was to find an alternative toner. The D25/D75 ratio of 0.854 in example 2 of D12 clearly fell outside the claimed range, and D12 would not have led the skilled person to toner particles with a narrow particle size distribution in the particularly selected range of from 0.70 to 0.85. The claimed subject-matter was thus not obvious in view of D1 in combination with D12.

V. On 12 December 2008, opponent I (in the following "the appellant") filed a notice of appeal against the above

decision and paid the prescribed fee on the same day. A statement setting out the grounds of appeal was filed on 20 February 2009 together with

D14: EP 0 430 674 A1; and

D15: US 5,288,577 A.

VI. By its letter of 16 July 2009, the proprietor (Ricoh Company, Ltd; in the following "the respondent") filed a response to the appeal.

VII. By its letter of 11 November 2009, the appellant submitted

D17: Abstract of JP 04-001773 A; and

D18: Determination of the D25/D75 ratio of figure 8 of D12.

VIII. By communication dated 20 April 2012, the board summoned the parties to oral proceedings and issued its preliminary opinion addressing inventive step in view of D1 as the closest prior art.

IX. By its letter of 21 December 2012, the respondent filed

D19: Additional experimental data.

X. By its letter of 10 January 2013, opponent II (party as of right) announced that it would not be represented at the oral proceedings. It thereafter took no active part in the appeal proceedings and did not file any request.

XI. On 25 January 2013, oral proceedings were held before the board. As announced, opponent II was not represented. The appellant and the respondent maintained their requests presented in writing. The appellant further requested that the respondent's additional experimental data D19 not be admitted into the proceedings.

XII. The appellant's arguments can be summarized as follows:

(a) Admissibility of D19

The respondent's experimental data D19 should not be admitted into the proceedings. Firstly, these data were clearly filed late, namely only eight months after the summons to oral proceedings. In addition, they constituted a response to the appellant's argument already submitted more than three years ago. Secondly, the data were not relevant as they could not show any improvement in granularity due to the claimed D25/D75 ratio. Thirdly, as it was the respondent who had reformulated the problem, the burden of proof to show that this problem had been credibly solved was on the respondent. At least up to the respondent's submission of D19, no such proof had been provided. There was thus no need for the appellant to provide any experimental counter-evidence prior to the filing of D19. After the respondent's submission of D19, only one month had remained until the oral proceedings. That was far too short a time for the appellant to prepare any counter-evidence.

(b) Inventive step

D1 constituted the closest prior art. The subject-matter of claim 1 differed from example 1 of this document only in terms of the D25/D75 ratio.

The respondent's reformulation of the problem as the provision of toners with improved granularity and transfer rate was not admissible as it was neither explicitly nor implicitly disclosed in the application as filed. The application as filed in particular did not contain any correlation between the problem of unevenness as disclosed therein and the reformulated problem of improved granularity. In the same way, the originally disclosed problems of image fixing and contamination of the photoconductor did not correlate with the reformulated problem of improved transfer rate.

Furthermore, it was not credible that the reformulated problem was solved by the claimed D25/D75 ratio. More particularly, the granularity of examples 5 and 8 in D16 was inferior rather than superior to that of comparative example 4. Moreover, apart from the D25/D75 ratio, the examples and comparative examples in D16 additionally differed in various further parameters. Hence, it was not possible to derive any correlation between the D25/D75 ratio and the improved granularity and transfer rate. That this correlation was missing followed also from examples 1-3, 7, 9 and 11 of the opposed patent. Although all these examples had the same D25/D75 ratio, the granularity varied.

The objective technical problem was therefore the provision of an alternative toner. It was however already known from D12 that a narrow particle size distribution was needed to obtain a high toner quality, with the D25/D75 ratio in example 2 being 0.854, which fell within the scope of claim 1. The subject-matter of claim 1 therefore lacked an inventive step in view of D1 in combination with D12.

XIII. The respondent's arguments can be summarised as follows:

(a) Admissibility of D19

The experimental data D19 should be admitted into the proceedings. They had been filed to rebut the appellant's argument that the previously submitted comparative data D16 did not show an adequate granularity comparison between an example of the invention and a control example. Not until November 2012 had it been possible to explain to the client the need for additional experimental data; that was why D19 could not have been submitted earlier. Moreover, D19 contained only one experimental result and served merely to clarify the question whether the improvement of granularity and transfer rate observed in D16 was indeed due to the claimed D25/D75 ratio.

(b) Inventive step

D1 constituted the closest prior art. The subject-matter of claim 1 differed from example 1 of this document in terms of the D25/D75 ratio.

The reformulated problem of improved granularity and transfer rate could be derived from the application as filed. The application as filed in particular discussed a number of aspects of image quality and mentioned in this context the problem of unevenness, which was understood by the skilled person as a qualitative term for the granularity of the toner images. On the other hand, image fixing and photoconductor contamination were linked to the reformulated problem of improving the transfer rate.

The experimental data in D16, namely examples 5, 6 and 8, demonstrated an unexpected improvement in granularity and transfer rate for compositions falling within the scope of the independent claims of the patent. It was true that these examples did not only differ from the further examples (no longer covered by claim 1) by way of the D25/D75 ratio, but by and large there was an overall trend that these examples according to the invention had a very good granularity compared to the remaining examples. Irrespective of this, D19 clearly showed that granularity improved also if only the D25/D75 ratio was changed. In this context, the small variation in the further particle size characteristics still present in D19 was due to the fact that it was impossible to change the

D25/D75 ratio without changing these further particle size characteristics.

The claimed solution was also not obvious in view of the prior art. In particular, D12 did not disclose that the values for D25 and D75 should be measured, or that the D25/D75 ratio should be in the range of 0.70 to 0.85. Furthermore, the value of 0.854 in D12 was outside the claimed range of 0.70 to 0.85. It was also not credible that the skilled person would, on the basis of D12, simply narrow the particle size distribution of D1 in such a way that the claimed D25/D75 ratio was obtained. No clear reason had been given as to why or how the skilled person would do this.

XIV. The appellant (opponent I) requested that the decision under appeal be set aside and that European patent No. 997786 be revoked.

XV. The respondent (patent proprietor) requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.

2. *Inventive step*

2.1 The invention as defined in the claims of the respondent's sole request ("main request" before the opposition division) concerns toners that lead to minimised contamination of the photoconductor and that

show minimised filming on the photoconductor such that toner images with high resolution and high precision can be produced when large quantities of papers are subjected to a continuous copying or printing operation (page 5, lines 10-13).

- 2.2 In the same way, D1 is directed to toners that are excellent in stability over time (paragraph [0004] on page 6) and thereby allow the stable production of images with excellent resolution (last sentence on page 2 of D1) and with an appropriate image density without fog on the background, implying the absence of filming on the photoconductor (paragraph [0004] on page 6 and the last sentence before paragraph [0014] on page 11).

Consequently, as acknowledged by both parties and the opposition division, D1 can be considered to represent the closest prior art.

- 2.2.1 As required by present claim 1, example 1 of D1 discloses a toner composition comprising a binder resin (polyester resin 1), a colouring agent (carbon black and chromium azo complex) and hydrophobic silica.

The toner composition of example 1 is pulverised and classified to obtain a powder. The toner and silica of D1 are thus present as particles, as required by claim 1.

As set out in the notice of opposition of opponent I and as not disputed by the respondent, the weight average particle size in example 1 can be calculated to

be 10.8 μm , which lies within the claimed range (6.0-11.5 μm).

The amount of toner particles with a particle diameter of 5 μm or less can be calculated from table 1 on page 14 of D1 as being somewhere above 7.8% and below 13.8%. This amount is equally within the claimed range (1-15%).

The content of toner particles with a particle diameter of twice or more the weight average particle size (10.8 μm), ie toner particles with a particle diameter of at least 21.6 μm , is 0% (channels 23-32 in table 1), which is equally within the claimed range (5 wt% or less).

It follows from the graphical representation in D8a that the D25/D75 ratio is 0.65625, which is below the lower limit of the range required by claim 1 (0.70-0.85).

- 2.2.2 Consequently, as acknowledged by both parties, the subject-matter of claim 1 differs from example 1 of D1 exclusively in terms of the D25/D75 ratio.
- 2.3 According to the respondent, the problem solved by this ratio in view of D1 was the provision of a toner that results in an improved transfer rate and improved granularity. This problem is at least not explicitly addressed in the application as filed.
- 2.4 Even if one accepts in the respondent's favour that this reformulated subjective problem is foreshadowed in the application as filed, it does not necessarily

constitute the objective technical problem for the assessment of inventive step. To qualify as the objective technical problem, an additional condition must be fulfilled, namely that this problem, ie the improvement of granularity and transfer rate, has been credibly solved by the feature distinguishing the subject-matter of claim 1 from that disclosed in D1, which is the claimed D25/D75 ratio.

- 2.4.1 To provide such evidence, the respondent submitted experimental data D16 during first-instance opposition proceedings (letter dated 12 May 2005), where the examples and comparative examples of the opposed patent were repeated and characterised with regard to granularity and transfer rate. The respondent argued that the experimental data in D16 demonstrated an unexpected improvement in granularity and in transfer rate for compositions falling within the scope of the independent claims of the patent, ie examples 5, 6 and 8, compared to compositions having a different D25/D75 ratio.

However, first of all, compared to comparative example 4, examples 5 and 8 do not show the alleged superiority but in fact have a granularity which is higher than and thus inferior to that obtained in comparative example 4 (0.30 and 0.33 *versus* 0.26).

Furthermore, and even more importantly, examples 5, 6 and 8 do not differ from the further examples and comparative examples only in terms of the D25/D75 ratio but also in terms of at least two of the remaining particle size parameters of the toner particles referred to in claim 1, namely the weight average

particle size, the content of particles having a particle size of 5 μm or less, and the content of particles having a particle size of twice or more the weight average particle size (table 1 of the opposed patent).

In this respect, it is important to note that although examples 1-3, 7, 9 and 11 have the same D25/D75 value of 0.63, the granularity, and to a lesser extent also the transfer rate, vary. It is thus evident that the granularity and transfer rate depend on the remaining particle size parameters.

In view of this, D16 cannot prove that it is the D25/D75 ratio as required by claim 1 that credibly solves the problem of improving granularity and transfer rate.

2.4.2 Since, furthermore, D19 was not admitted into the proceedings (see point 3 below), the results contained in this document cannot be taken into account in formulating the objective problem.

2.4.3 In summary, the subjective problem of improving granularity and transfer rate has not been credibly solved by the D25/D75 ratio required by claim 1.

2.4.4 Therefore, the objective problem has to be reformulated in a less ambitious manner as the provision of an alternative toner to that disclosed in D1.

2.5 As a solution to this problem, the opposed patent proposes the toner of claim 1, which is characterised

by comprising toner particles with a D25/D75 ratio of 0.70-0.85.

- 2.6 In view of the data contained in the opposed patent, this less ambitiously formulated problem has been credibly solved.
- 2.7 The claimed solution to this problem, ie the selection of a D25/D75 ratio of 0.70-0.85, is however already known from D12. This document first of all explicitly discloses that a narrow particle size distribution is needed in order to obtain high resolution and high image quality (page 4, lines 2-5 and lines 17-19 and page 7, lines 12-15). Apart from this general hint towards narrow particle size distributions (corresponding to high D25/D75 ratios), this document also discloses specific toner particles with a D25/D75 ratio within the claimed range. More particularly, example 2 of D12 discloses a toner comprising toner particles with a particle size distribution as shown in figure 8, from which a D25/D75 value of 0.854 can be derived (see D18). Contrary to the opposition division's finding, this value is not clearly outside the claimed range but in fact is covered by the upper limit of 0.85 in the claim. More particularly, this upper limit covers any value which, upon rounding to two digits behind the decimal point, gives a value of 0.85, which condition is clearly fulfilled for the value of 0.854 of D12.
- 2.7.1 Consequently, the skilled person starting from D1 and looking for an alternative toner to that disclosed in this document would have been taught by D12 to choose a toner with a higher D25/D75 ratio (ie a narrower

particle size distribution) such as 0.85. The skilled person thus would have arrived at the claimed solution. Consequently, the alternative chosen in claim 1 is obvious and thus not inventive in view of D1 in combination with D12.

3. *Admissibility of D19*

3.1 By its letter of 21 December 2012, the respondent filed additional experimental data D19. The appellant requested that these additional data not be admitted into the proceedings.

3.2 The respondent's data D19 were filed to rebut the appellant's argument that the previously submitted comparative data D16 did not show that it was the selection of a D25/D75 ratio as claimed that led to an improved granularity and transfer rate (see the respondent's own statement in its letter of 21 December 2012: "One argument of the Appellant is that the previously submitted comparative data on granularity [ie D16] do not show an adequate granularity comparison between an Example of the invention and control Example wherein there is only one feature different namely the D25/D75 ratio. To put this beyond doubt, the following experimental report is now submitted." (insertion in brackets by the board)).

D19 was filed only more than three years after the submission of the appellant's argument (filed on 11 November 2009, see the second and third paragraph on page 2 of the appellant's letter of 11 November 2009), and only roughly one month prior to the oral proceedings. It was thus clearly filed late.

3.3 During the oral proceedings, the appellant questioned the relevance of D19 and stated that in order to support his position he would have needed to file experimental counter-evidence.

3.4 As it was the respondent who had reformulated the technical problem when addressing inventive step, the burden of proof was on the respondent to show that this problem had been credibly solved by the claimed D25/D75 ratio. At least up to the respondent's submission of D19, no such proof had been provided (see the discussion of inventive step above). There was thus no need for the appellant to provide any experimental counter-evidence prior to the filing of D19. After the respondent's submission of D19, only one month remained until the oral proceedings. As stated by the appellant during the oral proceedings, this was far too short a time to prepare any counter-evidence, particularly in view of the fact that the respondent took more than three years to file its own data D19.

3.5 In order to give the appellant sufficient time to react to D19 and to file any experimental counter-evidence, the oral proceedings would thus have had to be adjourned. Pursuant to Article 13(3) RPBA, D19 was therefore not admitted into the proceedings.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:

M. Cañueto Carbajo

W. Sieber