

Internal distribution code:

- (A) Publication in OJ
(B) To Chairmen and Members
(C) To Chairmen
(D) No distribution

D E C I S I O N
of 12 December 2001

Case Number: T 0630/99 - 3.4.2

Application Number: 89312530.2

Publication Number: 0371824

IPC: G03G 9/087, C08G 63/181,
C09D 167/02

Language of the proceedings: EN

Title of invention:
Toner

Patentee:
MITSUBISHI RAYON CO., LTD.

Opponent:
Teijin Ltd.

Headword:
-

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step - after amendment (yes)"

Decisions cited:
-

Catchword:
-



Case Number: T 0630/99 - 3.4.2

D E C I S I O N
of the Technical Board of Appeal 3.4.2
of 12 December 2001

Appellant:
(Proprietor of the patent)

MITSUBISHI RAYON CO., LTD.
3-19, Kyobashi 2-chome
Chuo-ku
Tokyo 104-8350 (JP)

Representative:

Jones, Helen Marjorie Meredith
Gill Jennings & Every
Boardgate House
7 Eldon Street
London EC2M 7LH (GB)

Respondent:
(Opponent)

Teijin Ltd.
1-1 Uchisaiwai-Cho 2-Chome
Chiyoda-Ku
Tokyo 100 (JP)

Representative:

Weisert, Annekäte, Dipl.-Ing. Dr.-Ing.
Patentanwälte
Kraus & Weisert
Thomas-Wimmer-Ring 15
D-80539 München (DE)

Decision under appeal:

Decision of the Opposition Division of the
European Patent Office posted 14 April 1999
revoking European patent No. 0 371 824 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: E. Turrini
Members: M. A. Rayner
V. Di Cerbo

Summary of Facts and Submissions

I. The appellant (=patent proprietor) has appealed against the decision of the opposition division revoking European patent number 371 824 (application number 89 312 530.2). The patent in dispute concerns a toner containing a polyester resin. A document referred to in the decision under appeal was

D2: JP-B-62039428 (partial English language translation).

II. The opposition division was of the view that polyester A-3 disclosed in document D2 was not unambiguously disclosed as having properties satisfying those defined in the patent in dispute, in particular, it was not possible to judge whether the softening temperature falls within the claimed range, the determination of M_n was different and M_w not indicated. However, when starting from polyester A-3 of document D2, i.e. Example 3, no real selection of parameters that support an inventive step would exist. In general, the claimed toner was regarded as the outcome of routine experimentation intended to adapt the parameters of polyester resins to the needs of high speed copying machines or printers. Document D2 provides full guidance for such optimisation. Thus, the subject matter of claim 1 according to the main request lacked an inventive step. The opposition division went on to establish that the subject matter of claim 1 of the auxiliary request differed from that of the main request by including units derived from a diol component (b) of formula [1] in the claim as a mandatory feature. This feature was also considered as a feature distinguishing over the prior art under consideration. The division made reference to Example 3 of the contested patent as a resin devoid of such units

and considered it roughly comparable with resin B of Example 1 of the patent, both resins having a reportedly good melt flowability, fixing property and high image sharpness. Therefore, the division saw the objective problem solved by the diol component (b) of formula [1] as the provision of further toners with these properties. Since the use of diol component (b) was common in the field of polyester resins for toners, for example from the last three lines of page 1 of document D2, its incorporation in the polyester resin to solve this problem was obvious for the skilled person. The division therefore concluded that the subject matter of claim 1 according to the then auxiliary request was not allowable for lack of inventive step.

- III. The appellant requests setting aside of the decision of the opposition division and maintenance of the patent based on claim 1 as amended according to the auxiliary request before the opposition division. A set of claims corresponding to this new main request and a correspondingly amended description were filed with the statement setting out the grounds for appeal. Oral proceedings were requested on an auxiliary basis.

According to the appellant, the decision of the opposition division on lack of inventive step was made because no specific effect was recognised in the case of presence of diol component (b) of formula [1]. However, the specification describes with reference to Example 1 (use of the (b) component), that resins A to H have a good melt flowability, *mixing property and smoothness*, a good image sharpness being obtained when used for colour toner and a good fixing property for usual toner (see page 6, lines 12 to 15). Furthermore from the glass transition temperature, the resins have an excellent blocking resistance. On the other hand in comparative Example 2 in the newly submitted

description (corresponding to Example 3 in the granted patent specification and pertaining to non-use of (b) component), the resin is described as having an excellent melt flowability, fixing property and blocking resistance and an image formed by the toner has a high sharpness (see lines 15 to 17 on page 10 of the patent). Thus comparative Example 2 is silent concerning *mixing property and smoothness*. An evaluation of these properties by the appellant led to the following result:-

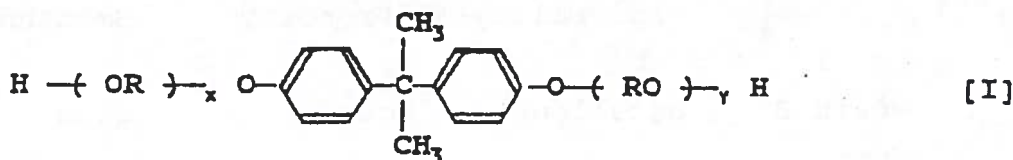
Resin	Melt Flowability	Mixing Property	Smoothness
Ex. 1 Resin B	excellent	good	good
Comp. Ex. 2	excellent	poor	poor

The mixing property was evaluated by applying toners of two different colours to a plain paper sheet at the same concentrations, then fixing followed by visually evaluating the mixing property. The smoothness was evaluated by applying toner onto an overhead projector sheet and fixing to form a uniform coloured layer. The coloured sheet was projected and the smoothness evaluated by the brightness and clearness of the projected colour. From the results it can be seen that the invention attains notable effects about which document D2 is silent.

IV. The respondent for his part informed the board that no response to the statement setting out the grounds for appeal would be made.

V. Claim 1 according to the request of the appellant is worded as follows:

A toner containing a polyester resin, which consists of (a) units derived from at least one dicarboxylic acid component selected from the group consisting of terephthalic acid components and isophthalic acid components, (b) as an essential feature, up to 80% by mole, based on the total carboxylic acid component, of units derived from a diol component represented by the following formula [1]:



wherein R represents an alkyl group having 2 or 3 carbon atoms, and x and y are integers satisfying the requirement of $\leq 2 \leq x+y \leq 6$. and (c) 20% by mole or more, based on the total carboxylic acid component, of units derived from an aliphatic diol component, and which has a weight average molecular weight M_w of 3,000 to 20,000, a number average molecular weight M_n of 1,000 to 10,000, a glass transition temperature T_g of 40 to 70°C and a softening temperature of 70 to 130°C.

{An obvious error was made in claim 1 submitted with the appeal in that the word "to" in line 3 was deleted in error (both the version attached to the minutes of the oral proceedings before the opposition division and the correspondingly amended description submitted with the appeal contain this word)}

Reasons for the Decision

1. The appeal complies with the provisions mentioned in Rule 65(1) EPC and is therefore admissible.
2. *Article 123 EPC*
 - 2.1 Presence of units derived from a diol component (b) of formula [1] in claim 1 are now required in the subject matter claimed, whereas in the claim as granted, in addition, 0% was permitted. Exclusion of the possibility of 0% does not result in the claim being amended in such a way as to extend the protection conferred. The board is therefore satisfied that Article 123(3) EPC has not been infringed.
 - 2.2 Support for claim 1 can be seen for example in claim 5 as originally filed. The description has been amended for consistency with the claim. Therefore, the board is also satisfied that the requirements of Article 123(2) EPC have been met.
3. *Prior art document D2*
 - 3.1 Section B of this document, which is the second half of page 1, recites the following:

"The amorphous and crystalline polyesters of the present invention contain, as an acid component, an aromatic polycarboxylic acid such as terephthalic, isophthalic acid, phthalic acid, naphthalenedicarboxylic acid, trimellitic acid, pyromellitic acid or benzophenone tetracarboxylic acid; an aromatic oxycarboxylic acid such as p-(2-hydroxyethoxy)benzoic acid; an aliphatic polycarboxylic acid such as succinic acid, fumaric acid, adipic acid, azelaic acid, sebacic acid or decamethylenedicarboxylic acid; or the like,

and as an alcohol component, an aliphatic polyol such as ethylene glycol, propylene glycol, 1,4-butane diol, 1,3-butane diol, 1,5-pentane diol, 1,6-hexane diol, neopentyl glycol, glycerine, trimethylol ethane, trimethylol propane or pentaerythritol; an alicyclic polyol such as 1,4-cyclohexane diol or 1,4-cyclohexane dimethanol; an addition product of bisphenol A with ethylene oxide or propylene oxide; or the like."

- 3.2 A number of polyesters (amorphous polyesters A-1 to A-4 and crystalline polyesters B-1 to B-3) are shown in Table 1. Only polyesters A-3, B-1 and B-3 are restricted to acid components terephthalic, isophthalic acid and none of these contain bisphenol addition product with ethylene oxide or propylene oxide. Softening points of 32 and 24°C are given for B-1 and B-3, respectively. An addition product of bisphenol A with ethylene oxide is shown with reference to polyester A-4, in this case trimellitic acid is included.

4. *Novelty*

- 4.1 The board sees no reason to comment on the novelty analysis made by the opposition division, which has not been challenged in the appeal proceedings.

5. *Inventive step*

- 5.1 In the appeal proceedings, the issue of inventive step has become focussed on the effect of the polyester containing units derived from a diol component (b) of formula [1]. While the opposition division considered the objective problem solved thereby to be the provision of toners further to comparative Example 2 having good melt flowability, fixing property and sharpness, the board has been persuaded by the reference in the patent to a good mixing property and

smoothness in association with Example 1, together with the uncontested results of investigations by the appellant, that the objective problem solved by the feature relating to component (b) can be seen as providing improved toners having these properties, which properties are not associated with comparative Example 2.

- 5.2 This objective problem is not addressed in document D2, where the starting point taken by the opposition division, polyester A3, does not contain any addition product of bisphenol A with ethylene or propylene oxide (see section 3.2 above). The board can see no reason based on the last three lines of page 1 of document D2 (see last two lines of section 3.1 above) for the skilled person to modify polyester A-3 in this direction as, for example in the case of polyester A-4, where an addition product is used, the acid components are not the same. Therefore, in view of the problem solved, the board reached the conclusion that including units derived from a diol component (b) of formula [1] in the polyester resin was not obvious having regard to document D2.
- 5.3 A review of the prior art in the proceedings before the first instance also did not reveal any subject matter affecting the conclusion of the board set out in point 5.2 so that the subject matter of claim 1 can be considered to involve an inventive step within the meaning of Article 56 EPC.
6. In view of the positive conclusion reached in point 5.3 the oral proceedings requested by the appellant on an auxiliary basis are not necessary.

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 with the order to maintain the patent as amended with the following documents:

Claims:

claims 1 to 5 filed with the letter of 16 August 1999
{N.B. The word "to" in the third line of printed
claim 1 is shown erroneously as deleted}

Description:

pages 4 to 9 of the granted patent specification
pages 2, 3, 10 filed with the letter of 16 August 1999

The Registrar:

The Chairman:

P. Martorana

E. Turrin