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**D E C I S I O N**  
of 5 June 2000

**Case Number:** T 0208/99 - 3.4.2

**Application Number:** 87907344.3

**Publication Number:** 0344308

**IPC:** G03G 9/08, G03G 9/107

**Language of the proceedings:** EN

**Title of invention:**  
Resin for toner and toner containing same

**Patentee:**  
MITSUI CHEMICALS, INC.

**Opponent:**  
Sanyo Chemicals Industries, Ltd.

**Headword:**  
-

**Relevant legal provisions:**  
EPC Art. 54(2)(3)

**Keyword:**  
"Novelty - yes"

**Decisions cited:**  
-

**Catchword:**  
-



Case Number: T 0208/99 - 3.4.2

**D E C I S I O N**  
**of the Technical Board of Appeal 3.4.2**  
**of 5 July 2000**

**Appellant:** MITSUI CHEMICALS, INC.  
(Proprietor of the patent) 2-5, Kasumigaseki 3-chome  
Chiyoda-ku  
Tokyo (JP)

**Representative:** Kirkham, Nicholas Andrew  
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**Respondent:** Sanyo Chemical Industries, Ltd  
(Opponent) 11-1, Ikkyo Nomoto-cho  
Higashiyama-ku  
Kyoto 605 (JP)

**Representative:** WILHELMS, KILIAN & PARTNER  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 30 December 1998  
revoking European patent No. 0 344 308 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

**Chairman:** E. Turrini  
**Members:** M. A. Rayner  
B. J. Schachenmann

## Summary of Facts and Submissions

I. The present appeal is made by the patent proprietor (=appellant) against the decision of the opposition division revoking European patent No. 344 308 (application No. 87 907 344.3, date of filing 06 November 1987, designated states CH, DE, FR, GB, IT, LI, NL).

II. Amongst others, the following documents were referred to in the decision under appeal.

D1: EP-A-0 259 189 (date of publication 16 March 1988, date of filing 7 September 1987, designated states DE, FR, GB, IT, NL), and

D5: GB-A-2 078 385 (date of publication 6 January 1982).

The opposition division established that document D1 falls within the terms of Article 54(3) EPC for contracting states DE, FR, GB, IT and NL. The division found that document D1 does not disclose a polymerisation temperature of the low molecular weight polymer in the range of 190°-230°C. The selection of the polymerisation temperature was not however crucial in document D1, it being known that other process parameters may be varied to obtain a specific molecular weight. Moreover there was no evidence that the selection of this temperature results in a final vinyl polymer having different properties indicating structural modifications compared to the vinyl polymer of document D1. Accordingly for the states DE, FR, GB, IT and NL, the subject matter of claim 1 of the patent as granted is not new. Document D5 discloses a toner

resin comprising, as the main resin, a vinyl polymer obtained by a two step polymerisation starting with a high or low molecular weight pre-polymer. No evidence had been provided during the opposition proceedings of differing product parameters of the subject matter of claim 1 of the patent as granted, which subject matter is not new over the disclosure of document D5. The division decided that claim 1 of auxiliary request 2 was not allowable under Article 123(3) since it contained only parts of Example 1.

- III. In the statement of appeal, the appellant requested the maintenance of the patent as granted or as amended during the course of the appeal proceedings and oral proceedings should the board be unable to grant the request of the appellant in written proceedings. The appellant filed an experimental report with the statement of appeal, submitting that this clearly showed that the temperature of polymerisation results in a different toner resin to those shown in document D1 or D5.
- IV. The respondent (=opponent) requested the board to dismiss the appeal of the appellant and on an auxiliary basis oral proceedings. The respondent filed a data sheet with the reply to the statement of appeal. The data sheet was submitted to show that different toner properties are largely affected by other polymerisation conditions, particularly difference in conditions for removing volatile matter from the toner resin. The respondent also made reference to a data sheet filed during the opposition proceedings and relating to document D1. The difference in temperature between the known value of 180°C and the claimed value of 190°C was submitted to be too small to play a significant role.

- V. A further experimental report together with comments was filed in response by the appellant. Attention was drawn to charge distribution not being dependent on the level of residual volatile matters.
- VI. Oral proceedings were appointed, consequent to the auxiliary requests of the parties. In a communication accompanying the summons, the board expressed the view that it appeared from graphs relating to charge distribution according to the experimental reports filed by the appellant that differences in charge distribution characteristics may result from modification of the process temperature parameters.
- VII. During the oral proceedings, the respondent explained that a temperature of 180°C (document D1) is very close to 190°C as required by claim 1 of the patent and queried why no theoretical reason had been given by the appellant as to why the polymerisation temperature affects charge distribution of the toner. The appellant replied that the temperature had been recognised as important in the patent and a possible reason for the improved charge distribution of the toner is that the higher temperature of polymerisation reduces the spread of molecular weights.
- VIII. At the end of the oral proceedings, the appeal board gave its decision on the basis of the requests put before the Board.
- IX. The appellant requested that the decision under appeal be set aside and that the patent be maintained unamended, or as auxiliary requests 1 to 5, on the basis of one of the sets of claims filed as auxiliary requests 1 to 5. The claims 1 of the requests before

the board are worded as follows:-

**Main request**

A toner resin comprising as a principal component a polymer obtainable by the process comprising the steps of dissolving (A) 20-80 parts by weight of a low molecular vinyl polymer having a number average molecular weight of 1 000-5 000 and a glass transition temperature (Tg) of 40-75°C, and obtained by polymerisation at 190-230°C, in (B) 80-20 parts by weight of vinyl monomers, the sum of said low molecular vinyl monomer and vinyl monomers being 100 parts by weight, and mixing therewith 0.01-5 parts by weight of a polymerization initiator and 0-3 parts by weight of a crosslinking agent, dispersing the resultant mixture in an aqueous system and then polymerizing the same.

**First auxiliary request**

Claim 1 of this request differs from the main request by replacement of "obtained by polymerisation at 190-230°C" by "obtained by solution polymerisation at 190-230°C under pressure with a polymerisation initiator present".

**Second auxiliary request**

Claim 1 of this request differs from the main request by replacement of "obtained by polymerisation at 190-230°C" by "obtainable by solution polymerisation in the presence of 0.5 parts of di-t-butyl peroxide per 100 parts of styrene in a mixed solvent composed of 70 parts of styrene and 30 parts of a mixed solvent of xylene and ethylbenzene charged continuously at a rate

of 750 cc/hr into a 5l reactor whose internal temperature and pressure were maintained at 190-230°C and 5.9 bar".

**Third auxiliary request**

Claim 1 of this request corresponds in substance to claims 1 and 7 as granted.

**Fourth auxiliary request**

Claim 1 of this request corresponds in substance to claims 1, 7 and 9 as granted.

**Fifth auxiliary request**

Claim 1 of this request is directed to a method for the preparation of a toner resin comprising as a principal component a polymer obtained by the process comprising the steps of (a) dissolving ...(as main request)... crosslinking agent; (b) dispersing ...(as main request)... aqueous system; and (c) polymerising the aqueous dispersed mixture of (b).

**Reasons for the Decision**

1. The appeal complies with the provisions mentioned in Rule 65(1) EPC and is therefore admissible.

*Main Request*

2. *Article 54(3) EPC- Novelty with respect to document D1*

- 2.1 Having regard to the date of filing and publication of

document D1 in relation to the patent in dispute, it is comprised within the state of the art within the meaning of Article 54(3) EPC for contracting states DE, FR, GB, IT and NL. Reference to document D1, for example to claims 15, 16, 32 and 39, cited by the opposition division in the decision under appeal, reveals the toner resin therein disclosed involves the following features.

A toner resin comprising a vinyl-type polymer or copolymer prepared by forming a first polymer which has a glass transition point of 50°C or higher and provides a molecular weight distribution thereof according to GPC such that there is a main peak in the molecular weight range of 2 000 to 10 000 and has a ratio (Mw/Mn) of weight-average molecular weight (Mw)/number-average molecular weight (Mn) less than or equal to 3.5; and subjecting a polymerisable monomer with the first polymer dissolved therein to suspension polymerization, the monomer composition contains a vinyl type monomer as the polymerisable monomer and a divinyl type monomer as the crosslinking agent the suspension polymerization being effected by using 10-90 parts by weight of the polymerisable monomer per 100 parts by weight of the aqueous dispersion medium.

2.2 Document D1 makes however no reference to the low molecular weight vinyl polymer being obtained by polymerisation at 190-230°C, on the contrary, the temperature range mentioned in claim 36 is 70-180°C and as far as for example the specific Examples 1 to 4, 6 and 15 to 19 cited by the respondent and mentioned in the decision under appeal are concerned, temperatures of typically 148-156°C are used. There has in fact never been any dispute amongst the parties that the



claimed temperature range is not to be found in document D1, the respondent only arguing that other temperatures were possible. Whether or not 180°C is "close" or not to 190°C does not bear on novelty because novelty is present simply because the values being different.

2.3 Nevertheless, in accordance with established case law of the Boards of Appeal, also reflected in section C-III, 4.7b of the Guidelines, a process feature can only contribute to the novelty of a product claim insofar as it gives rise to a distinct and identifiable characteristic of the product. In this situation, novelty is provided by the temperature range of 190-230°C only if a detectable difference in the final product is caused thereby. The appeal is based on showing that a difference at least in charge distribution properties does exist and relies on experimental data relating to toner T-1 prepared according to Example 1 of the patent as compared with toner resin T-2 prepared according to Example 1 of document D1 or T-2' further involving a volatile matter removal following that of toner T-1.

2.4 The main thrust of the submissions of the respondent in the present case is not that the difference in charge distribution properties does not exist, since this is acknowledged (see for example the third line on page 2 of the response of the respondent to the appeal statement). The respondents line of attack is based on the argument that many different parameters in the production of the toner can provide the difference in charge distribution and that accordingly, if (a) such parameters are not satisfied (in particular, volatile matter content) by toner resins falling within the

ambit of claim 1, then the difference is not achieved or (b) the parameters are met in the prior art even without the high temperature, then a toner resin with the same properties is produced. In other words, the relation of the high temperature to the different magnetic distribution property is challenged. The respondent draws attention to toners T-I, II and III according to the data sheet of its own experiments filed in the appeal proceedings and relating to Example 1 of the patent as well as the experimental data filed in the opposition proceedings relating to toners T-1 and T-2 relating to document D1 in support of this position.

2.5 In the present case, the pertinence of the large quantity of experimental data filed by the parties to the teachings of the patent and document D1 can be assessed by analysing its closeness thereto. In the case of toner T-1 (appellant) and toner T-I (respondent), the procedure follows closely that of Example 1 of the patent and therefore the board views the data concerned as pertinent. The same applies to resin T-2 (appellant) and toner T-1 (respondent-opposition proceedings) in connection with document D1. However the other cases show divergence from the examples in the patent or document D1, as the case may be, and the board considers them less pertinent.

2.6 So far as the more pertinent data is concerned, the difference in charge distribution is shown by comparing toners T-1 and T-2 in Figure 1 of the experimental report as argued by the appellants. There is no reason disclosed by the data of the respondent relating to resin T-I or toner T-1 to doubt this difference. Therefore, the data supplied by the respondent does not

challenge the relevance of the high temperature to the difference in charge distribution. Thus the result of consideration of the more pertinent data is that a distinct and identifiable characteristic providing novelty of the toner resin exists.

- 2.7 So far as the less pertinent data is concerned, the conflicting data provided by the parties does not persuade the board that no difference in properties exists for the following reasons. The data provided by the respondent in the appeal proceedings, i.e. toner T-II and T-III, results from conjecture about residual volatile matter in Example 1 of the patent. Since no specific information is given in relation to charge distribution of Example 1 of D1 and Toner T-II and III, no relevance thereto can be identified. Furthermore, the data concerned is countered by that of the patentee in relation to toner T-2' showing that even with the same volatile matter removing treatment as toner T-1 charge distribution of Example 1 of D1 is not substantially changed (Figure 1 of the further experimental report) and a distinct and identifiable characteristic still exists (Figure 2). The data pertaining to toners T-2 and T-3 filed by the respondent during the opposition proceedings concerns various modifications of the procedure shown in document D1 as well as the temperature range, yet most importantly gives no information about the charge distribution property of the toners (only a single figure for frictional charge amount is recited). Thus the board is not persuaded that the arguments and less pertinent data supplied by the respondent show volatile matter content rather than temperature produces the charge distribution nor that this is achieved by toner according to document D1. Accordingly the challenge of

the opponent fails and the board is not persuaded as to lack of novelty.

2.8 Since the difference in the charge distribution property of toner exists, it is not necessary for the purpose of establishing novelty that the patentee provide a comprehensive explanation of the underlying theory upon which this difference is based, appropriate and/or interesting as this may be from other points of view. The board must therefore conclude that any lack of a comprehensive explanation of the underlying theory does not in the present case affect novelty of the subject matter of claim 1 over the disclosure of document D1.

2.9 The subject matter of claim 1 according to the main request is therefore novel in the sense of Article 54(3)EPC over the disclosure of document D1.

3. *Article 54(2) EPC- Novelty with respect to document D5*

3.1 Document D5 relates to toner and discloses formulating a base resin with use of a base compound composed of ingredients L and H, which are individually composed of one or more polymer types selected from a group of compounds comprising styrene polymers, acrylic polymers and styrene-acrylic copolymers but different from each other in formulation wherein the ingredients L (lower molecular weight polymer) and H (higher molecular weight polymer) have a glass transition point of 50°C or over and 65°C or under, respectively. According to lines 50 to 55 on page 2, the base resin used can be prepared by an arbitrary process. For example, a process can be used by which a polymer compound that comprises either the ingredient L or H is prepared by

the first stage of polymerization reaction and the product polymer compound is then dissolved in a monomer composition that can give a second polymer compound comprising the other ingredient to conduct the second stage of polymerization reaction to prepare such second polymer compound.

3.2 Document D5 makes no reference to the low molecular weight vinyl polymer being obtained by polymerisation at 190-230°C. Lower temperatures of 80°C and 95°C are mentioned in the examples. Therefore an analogous reasoning to that developed above with respect to document D1 in relation to novelty of this feature also applies in the case of document D5, toners T-3 and T-3' of the experimental data being read for toners T-2 and T-2', respectively. Accordingly, even without detailed analysis of the remaining features of the claim, the board must conclude that the subject matter of claim 1 is novel over the disclosure of D5 at least by virtue of the 190-230°C temperature range feature.

3.3 The subject matter of claim 1 according to the main request is therefore novel in the sense of Article 54(2) EPC over the disclosure of document D5.

#### 4. *Other documents*

Novelty of the subject matter of claim 1 over the other documents in the file has not been disputed. For the purpose of deciding on the novelty of the subject matter of claim 1 in relation to document D1 or D5, it is not permissible to combine teachings from other documents therewith.

#### 5. *Auxiliary requests*

Since the subject matter of claim 1 of the main request is novel, consideration of that of the auxiliary requests is not necessary.

6. The first instance did not consider the other ground (lack of inventive step) on which the opposition was based. The case is therefore remitted to the first instance for the examination of inventive step.

## **Order**

### **For these reasons it is decided that:**

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

The Registrar:

The Chairman:

P. Martorana

E. Turrini