

***THIS OPINION WAS NOT WRITTEN FOR PUBLICATION***

The opinion in support of the decision being entered today  
(1) was not written for publication in a law journal and  
(2) is not binding precedent of the Board.

Paper No. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

---

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

---

*Ex parte* DAVID TERRELL  
STEFAAN DE MEUTTER and BERND KALETTA

---

Appeal No. 1997-0006  
Application 08/409,946

---

HEARD: February 22, 2000

---

Before KIMLIN, WARREN and LIEBERMAN, *Administrative Patent Judges*.

WARREN, *Administrative Patent Judge*.

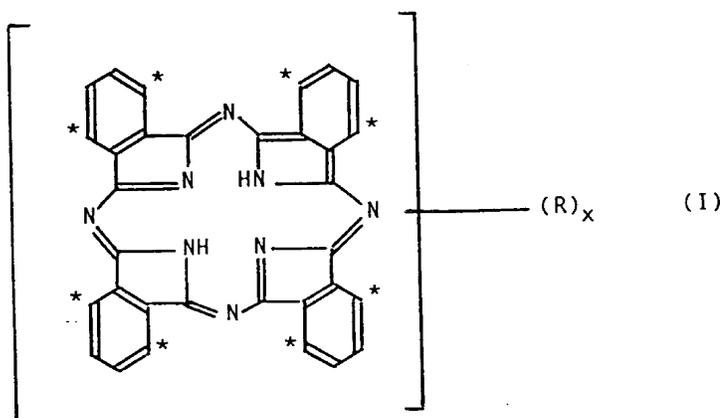
*Decision on Appeal*

This is an appeal under 35 U.S.C. § 134 from the decision of the examiner finally rejecting claims 1 through 11 and 14 through 19, which were all of the claims in the application. Subsequent to the final rejection, appellants cancelled claims 2, 3 and 10, amended claim 18, and submitted new claim 20.<sup>1</sup> The examiner has held claims 20 and 11 to be allowable. Thus, claims 1, 4 through 9 and 14 through 19 remain for our consideration on appeal. Claim 1 is illustrative of the claims on appeal:

---

<sup>1</sup> Amendments of June 7, 1996 (Paper No. 13) and September 3, 1996 (Paper No. 15).

1. An electrophotographic recording material comprising a conductive support and a photosensitive recording layer having charge generating capacity by photo-exposure and containing as photoconductive pigment a photoconductive crystalline substituted metal-free phthalocyanine compound and/or mixed crystal pigment of said substituted metal-free phthalocyanine compound with an unsubstituted metal-free phthalocyanine, characterized in that said substituted metal-free phthalocyanine compound is represented by following general formula (I)



wherein

R represents cyano substituent in ortho-position on at least one of the 6-membered rings in the phthalocyanine structure in which each substituted 6-membered ring is only mono-substituted, the possible ortho-positions being marked by asterisk (\*), and

x is an integer 1, 2, 3, or 4,

wherein the major part by weight of said substituted metal-free phthalocyanine compound and mixed crystals of said substituted metal-free phthalocyanine compound with unsubstituted metal-free phthalocyanine is (are) present in the X-morphological form.

The appealed claims as represented by claim 1<sup>2</sup> are drawn to an electrophotographic recording material comprising at least a conductive support and a photosensitive recording layer, wherein the photosensitive recording layer contains at least the crystalline photoconductive pigment depicted in general formula (I) set forth in the claim that is a metal-free phthalocyanine substituted in an ortho-position by 1 to 4 cyano groups and, in major part, is in the X-morphological form, which pigment can also be combined with an unsubstituted metal-free phthalocyanine in mixed crystals. According to appellants, the subject pigments have “high charge generating efficiency” and “good cyclic behavior in repetitive use” (specification, page 8).

---

<sup>2</sup> Appellants state in their brief (pages 6-7) that the appealed claims constitute a single group. Thus, we decide this appeal based on appealed claim 1. 37 CFR § 1.192(c)(7) (1995).

The references relied on by the examiner are:

Tamura et al. (Tamura)	4,443,528	Apr. 17, 1984
Kobata et al. (Kobata)	5,204,200	Apr. 20, 1993

The examiner has rejected appealed claims 1 through 11 and 14 through 19 under 35 U.S.C. § 103 as being unpatentable over Tamura view of Kobata. We affirm.

Rather than reiterate the respective positions advanced by the examiner and appellants, we refer to the examiner's answer and to appellants' principal and reply briefs for a complete exposition thereof.

### *Opinion*

We have carefully reviewed the record on this appeal and based thereon find ourselves in agreement with the examiner that the claimed electrophotographic recording material encompassed by appealed claim 1 would have been obvious over the combined teachings of Tamura and Kobata to one of ordinary skill in this art at the time the claimed invention was made.

As an initial matter, we must determine the invention encompassed by appealed claim 1 as it stands before us, mindful that we must give the broadest reasonable interpretation to the terms of the appealed claim consistent with appellants' specification as it would be interpreted by one of ordinary skill in this art. *See In re Morris*, 127 F.3d 1048, 1054-55, 44 USPQ2d 1023, 1027 (Fed. Cir. 1997). The use of the transitional term "comprising" opens the claimed electrophotographic recording material to the inclusion of any additional materials and layers in any amount. *Exxon Chemical Patents Inc. v. Lubrizol Corp.*, 64 F.3d 1553, 1555, 35 USPQ2d 1801, 1802 (Fed. Cir. 1995) ("The claimed composition is defined as *comprising* - meaning *containing* at least - five specific ingredients [emphasis supplied]."); *In re Baxter*, 656 F.2d 679, 686-87, 210 USPQ 795, 802-03 (CCPA 1981) ("As long as one of the monomers in the reaction is propylene, any other monomer may be present, because the term 'comprises' permits the *inclusion* of other steps, elements, or materials."). We further find that the term "containing" used in the definition of the "photosensitive recording layer" has the same effect as the transitional term "comprising." *Exxon, supra; In re Panagrossi*, 277 F.2d 181, 185, 125 USPQ 410, 413 (CCPA 1960). This transitional term opens the "photosensitive

recording layer” to the inclusion of any additional materials and layers in any amount, including the presence of other phthalocyanine pigments than those specified. We note in this respect that only “the major part by weight of” the unmetallized, ortho-cyano substituted phthalocyanine pigment, separately or in mixed crystals, “is (are) present in the X-morphological form” which, of course, permits the presence of other crystalline forms of the pigment separately or in mixed crystals. Thus, the photosensitive recording layer as specified in claim 1 must contain only at least some X-form, unmetallized, ortho-cyano substituted phthalocyanine, separately or as part of a mixed crystal.

We now consider the combined teachings of Tamura and Kobata.<sup>3</sup> The examiner submits (answer, pages 4-7) that one of ordinary skill in this art following the teachings of Tamura would have reasonably selected from the disclosure thereof an unmetallized, cyano substituted phthalocyanine derivative in the so-called “X-form” crystalline form in preparing photoconductive layers because Tamura discloses cyano substitution and, along with Kobata, discloses that the use of the X-form of unmetallized phthalocyanines was known in the art. Indeed, with respect to the latter, we find from the prior art as acknowledged in appellants’ specification (page 7),<sup>4</sup> namely the discussion of the disclosure of United States Patent 3,816,118, that the preparation of X-form, unmetallized, substituted and unsubstituted phthalocyanine pigments and the use thereof in electrophotographic material were known in the prior art. Appellants further acknowledge in this context that “[p]hthalocyanine pigments in the morphological X-form have a broadened spectral sensitivity range in comparison with á- or â- form (see Fig. 1) and offer an improved photosensitivity, see, e.g. the spectral sensitivity characteristics of a

---

<sup>3</sup> In evaluating the teachings of Tamura and Kobata, we must, of course, consider the specific teachings thereof and the inferences one of ordinary skill in this art would have reasonably been expected to draw therefrom. *In re Fritch*, 972 F.2d 1260, 1264-65, 23 USPQ2d 1780, 1782-83 (Fed. Cir. 1992); *In re Preda*, 401 F.2d 825, 826, 159 USPQ 342, 344 (CCPA 1968). In evaluating the relevance of the various teachings of these references, we must presume skill on the part of those of ordinary skill in this art. *See In re Sovish*, 769 F.2d 738, 743, 226 USPQ 771, 774 (Fed. Cir. 1985).

<sup>4</sup> It is axiomatic that our consideration of the prior art must, of necessity, include consideration of the admitted state of the art. *In re Hedges*, 783 F.2d 1038, 1039-40, 228 USPQ 685, 686 (Fed. Cir. 1986); *In re Nomiya*, 509 F.2d 566, 184 USPQ 607 (CCPA 1975); *In re Davies*, 305 F.2d 501, 503, 134 USPQ 256, 258 (CCPA 1962).

photoconductor with X-metal-free phthalocyanine (FASTOGEN BLUE 8120B from Dainippon Ink and Chemicals Inc.) in Figure 1” (*id.*, lines 31-36). Further, in this respect, we agree with the examiner’s finding that Kobata would have taught one of ordinary skill in this art to use an X-form, non-metal, unsubstituted phthalocyanine in the charge generating layer of a laminated organic photosensitive material (e.g., col. 2, lines 33-51).

Thus, we find that one of ordinary skill in this art, armed with the knowledge in the art at the time the claimed invention was made with respect to the desirability of X-form, unmetallized, substituted and unsubstituted phthalocyanine pigments, would have readily recognized that such pigments are included within the X-form phthalocyanine pigments that Tamura teaches are known and would have been led by this reference to prepare the X-form of other phthalocyanine pigments, including the unmetallized, cyano substituted phthalocyanine pigments as well as mixed crystals containing the same, taught in the reference to be used in photoconductive layers (e.g., col. 3, lines 38 and 53-58). While Tamura is silent as to the position of the cyano substituent on the benzene nuclei of the phthalocyanine compound, we must agree with the examiner that one of ordinary skill in this art would have recognized that such a substituent must necessarily occupy either the ortho or the metal position, which are the only two available positions available for substitution on said nuclei, and, on this record, would thus have reasonably selected either position. Indeed, we observe that appellants admit in their specification that phthalocyanine pigments containing ortho cyano substitution on the benzene nuclei were known at the time the claimed invention was made (page 11, lines 26-27), and it is apparent on this record that methods for preparing the X-form of unmetallized, substituted phthalocyanines was also known and used in this art.

Therefore, in comparing the claimed electrophotographic recording material with the combined teachings of Tamura and Kobata based on this evidence, we agree with the examiner that, *prima facie*, one of ordinary skill in this art following the teachings of Tamura would have reasonably selected from the disclosure thereof an unmetallized phthalocyanine derivative, in which the benzene nuclei are substituted in the ortho position with cyano groups, that is in the X-crystalline form for combination with an unmetallized, unsubstituted phthalocyanine, either by mixing or in the form of a mixed crystal,

with the reasonable expectation of preparing photosensitive recording layers that “exhibit excellent photosensitivity and long-term stability or [sic] without any fatigue” as taught in this reference, even if the X-form is not a preferred crystal form (e.g., col. 2, lines 35-43 and 58-68, col. 3, lines 37-40, col. 4, line 32, to col. 5, line 3, and cols. 6-7). *See Merck & Co. v. Biocraft Labs.*, 874 F.2d 804, 807, 10 USPQ2d 1843, 1845-46 (Fed. Cir. 1989).

Accordingly, since a *prima facie* case of obviousness has been established over and Kobata, we have again evaluated all of the evidence of obviousness and nonobviousness based on the record as a whole, giving due consideration to the weight of appellants’ arguments. *See generally, In re Johnson*, 747 F.2d 1456, 1460, 223 USPQ 1260, 1263 (Fed. Cir. 1984); *In re Piasecki*, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984).

Appellants submit that there is “no impetus to select an X-form *mixed* crystal of the metal-free X-morphological form of unsubstituted phthalocyanine with metal-free (ortho) cyano-substituted phthalocyanine for any purpose” (principal brief, page 10; emphasis supplied). In support of their position, appellants urge in their principal brief that the X-form mixed crystals specified in the appealed claims are not among the preferred crystalline forms disclosed in Tamura and “there is no disclosure [in this reference] with respect to the superior properties for electrophotographic use . . . of the X-form *mixed* crystals of (ortho) cyano-substituted and non-substituted metal free phthalocyanine as disclosed in the present application” (pages 7-9; emphasis supplied). Appellants also point to evidence in their specification with respect to the claimed X-form mixed crystals and other crystalline forms, including those of meta-substituted phthalocyanines, as well as “X-type non-metal unsubstituted phthalocyanine” *per se* (*id.*, pages 8-10). We find that we agree with the examiner’s response to appellants’ arguments and evaluation of the cited evidence in the specification (answer, pages 8-10), to which we add the following only for emphasis.

We are not persuaded by appellants’ argument that Tamura prefers and exemplifies other crystalline forms than the X-form because we fail to find on this record that this teaching of the reference would have deterred one of ordinary skill in this art from selecting the X-form in accordance with the teachings of this reference, particularly since there is nothing in Tamura to suggest that

photosensitive recording layers with the disclosed characteristics would not be obtained with any of the disclosed crystalline forms. *See Merck*, 874 F.2d at 808, 10 USPQ2d at 1846. Indeed, it has long been settled that preferred embodiments are not controlling and all non-preferred or non-exemplified embodiments of a reference must be considered for all that such embodiments would have reasonably suggested to one of ordinary skill in this art. *See, e.g., Merck, supra*, quoting *In re Lamberti*, 545 F.2d 747, 750, 192 USPQ 278, 280 (CCPA 1976) (“[A]ll disclosures of the prior art, including unpreferred embodiments, must be considered.”). We further note, in this respect, that claim 1, as we have interpreted it above, encompasses the photoconductive layers reasonably suggested by Tamura to one of ordinary skill in this art which contain at least some amount of an X-form, unmetallized, ortho-cyano substituted phthalocyanine, either as a physical mixture or in a mixed crystal with any crystalline form of an unmetallized, unsubstituted phthalocyanine, regardless of the presence of other crystalline forms of unmetallized, ortho cyano-substituted phthalocyanine or other unmetallized, substituted phthalocyanine.

In considering the evidence in the specification urged by appellants to patentably distinguish the photosensitive recording layers containing the X-form of the phthalocyanine pigment as specified in claim 1 and such layers containing other crystalline forms of the same pigment, isomers thereof, and other substituted analogs as well as the X-form, unmetallized, unsubstituted phthalocyanine pigment, we again note that appellants have acknowledged in their specification that “[p]hthalocyanine pigments in the morphological X-form have a broadened spectral sensitivity range in comparison with á- or â- form (see Fig. 1) and offer an improved photosensitivity,” citing a commercial “X-metal-free phthalocyanine” (*see supra* pp. 4-5). Thus, on this record, it would reasonably appear that the differences stressed by appellants are no more than the difference that one of ordinary skill in the art armed with the knowledge in the art would reasonably expect to observe between the X-form and other crystalline forms known in the art. Appellants have provided no evidence that the data in their specification is of practical significance and indeed unexpected. It is well settled that the burden of establishing the significance of data in the record with respect to unexpected results rests with appellants, which burden is not carried by mere arguments of counsel. *See, e.g., In re Geisler*, 116 F.3d 1465, 1470, 43 USPQ2d 1362,

1365-66 (Fed. Cir. 1997); *In re Merck & Co.*, 800 F.2d 1091, 1099, 231 USPQ 375, 381 (Fed. Cir. 1986); *In re Longi*, 759 F.2d 887, 897, 225 USPQ 645, 651-52 (Fed. Cir. 1985); *In re Klosak*, 455 F.2d 1077, 1080, 173 USPQ 14, 16 (CCPA 1972); *In re D'Ancicco*, 439 F.2d 1244, 1248, 169 USPQ 303, 306 (CCPA 1971). Thus, in the absence of evidence explaining the practical significance of such results and that the results are unexpected even in view of the admitted knowledge in the art, we find that the evidence as a whole is more indicative of obviousness than nonobviousness. *See, e.g., Geisler, supra; Merck, supra; In re Hoffmann*, 556 F.2d 539, 541, 194 USPQ 126, 128 (CCPA 1977); *Klosak, supra; In re Gershon*, 372 F.2d 535, 537, 152 USPQ 602, 604 (CCPA 1967).

Accordingly, on this record, we must agree with the examiner that appellants have failed to establish that the combined teachings of Tamura and Kobata, taken in light of the knowledge in the art as admitted by appellants, would not have provided one of ordinary skill in this art with the suggestion of and a reasonable expectation of success in using an X-form, unmetallized, ortho-cyano substituted phthalocyanine pigment in the manner disclosed in the reference in preparing a photosensitive recording layer that has the characteristics taught therein. *In re Vaeck*, 947 F.2d 488, 493, 20 USPQ2d 1438, 1442 (Fed. Cir. 1991), citing *In re Dow Chemical Co.*, 837 F.2d 469, 473, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988). Indeed, all that is required is a reasonable expectation of success, not absolute predictability. *Merck*, 874 F.2d at 808, 10 USPQ2d at 1847; *In re O'Farrell*, 853 F.2d 894, 903-04, 7 USPQ2d 1673, 1681 (Fed. Cir. 1988).

Accordingly, based on our consideration of the totality of the record before us, we have weighed the evidence of obviousness found in the combined teachings of Tamura and Kobata with appellants' countervailing evidence of and argument for nonobviousness and conclude that the claimed invention encompassed by appealed claims 1 through 11 and 14 through 19 would have been obvious as a matter of law under 35 U.S.C. § 103.

The examiner's decision is affirmed.

Appeal No. 1997-0006  
Application 08/409,946

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

*AFFIRMED*

EDWARD C. KIMLIN	)	
Administrative Patent Judge	)	
	)	
	)	
	)	
CHARLES F. WARREN	)	BOARD OF PATENT
Administrative Patent Judge	)	APPEALS AND
	)	INTERFERENCES
	)	
PAUL LIEBERMAN	)	
Administrative Patent Judge	)	

Appeal No. 1997-0006  
Application 08/409,946

Breiner & Breiner  
115 North Henry Street  
P.O. Box 19290  
Alexandria, VA 22320-0290