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opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.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 ROBERT C.U. YU and RICHARD L. POST

Appeal No. 95-3749
Application No. 07/953,619[1]

ON BRIEF

Before KIMLIN, PAK and OWENS, Administrative Patent Judges.

PAK, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on an appeal from the examiner's refusal to allow claims 2, 3, 6 through 13, 21, 23 and 25 through 30, which are all of the claims remaining in the application. Claims 3, 6 through 13, 21 and 26 were amended subsequent to final rejection.

Claims 21 and 26 are representative of the subject matter on appeal and read as follows:

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[1] Application for patent filed September 30, 1992.

21. An electrostatographic imaging member comprising a substrate and a charge transport layer applied by solution coating in methylene chloride; said substrate being comprised of a polymer selected from the group consisting of polyamide/nylons, polycarbonate/polybutylene terephthalate alloys, polyphthalamides, polyester liquid crystals, phenolic polymers and diallyl phthalates, said polymer insoluble in the methylene chloride and having a Tg of at least 90<C and a linear thermal contraction coefficient within about plus or minus $2x10^{-5}/^{0}C$ of the thermal contraction coefficient of said charge transport layer.

26. An electostatographic imaging member comprising a substrate and a charge transport layer applied by solution coating in methylene chloride; said substrate being comprised of a polymer subjected to gamma ray irradiation to provide a form insoluble in said methylene chloride and having a T_g of at least 90<C and a linear thermal contraction coefficient within about $\pm 2x10^{-5}/^{0}C$ of the thermal contraction coefficient of said charge transport layer.

The references relied on by the examiner are:

Yu (Yu'481)	4,983,481	Jan. 08, 1991
Takano et al. (Takano)	5,213,929	May 25, 1993 (Filed Jun. 06, 1990)
Yu (Yu'239)	5,229,239	Jul. 20, 1993 (Filed Dec. 30, 1991)

Principles of Polymer Systems, Second Edition, Hemisphere Publishing Corporation, McGraw-Hill Book Company, Ferdinand Rodriguez, pp. 285-286 (1982) (hereinafter referred to as "Rodriguez").

Textbook of Polymer Science, Third Edition, A Wiley-Interscience Publication, John Willey & Sons, Fred W. Billmeyer, Jr., p. 144 (1984)(hereinafter referred to as "Billmeyer").

The appealed claims stand rejected as follows:

(1) Claims 2, 3, 6 through 13, 21 and 25 under 35 U.S.C. § 103 as unpatentable over Yu'481 in view of Takano;

(2) Claims 23, 26 through 29 under 35 U.S.C. § 103 as unpatentable over Yu'481 in view of Rodriguez and Billmeyer;

(3) Claim 30 under 35 U.S.C. § 103 as unpatentable over Yu'481 in view of Rodriguez and Billmeyer as applied to claim 26 above, and further in view of Yu'239.

We have carefully reviewed the entire record before us, including all of the arguments advanced by the examiner and appellants in support of their respective positions. This review leads us to conclude that the examiner's § 103 rejections are not well-founded. Accordingly, we will reverse all of the examiner's § 103 rejections. Our reasons for this determination follow.

The claimed subject matter is directed to an electro-statographic imaging member which comprises a substrate and a charge transport layer applied by solution coating in methylene chloride. The substrate comprises a polymer selected from polyamide/nylons, polycarbonate/polybutylene terephthalate alloys, polyphthalamides, polyesters liquid crystals, phenolic polymer and diallyl phthalates (claim 21) or a polymer subjected to gamma ray irradiation (claim 26). The polymer must be

insoluble to methylene chloride. In addition, the substrate must have specific Tg and a specific linear thermal contraction coefficient relationship with a charge transport layer. See both claims 21 and 26.

The examiner has rejected claims 2, 3, 6 through 13, 21 and 25 under 35 U.S.C. § 103 as unpatentable over the combined teachings of Yu'481 and Takano. The examiner's rejection is predicated on the contention that:

> It would have been obvious to one having ordinary skill in the are at the time the invention was made to substitute the substrate having an undercoat layer comprising nylon taught be Takano et al. for the substrate of Yu because Takano et al. states that providing the substrate with an undercoat layer prevents any reduction of electrostatic charging property and improves the adhesive property.

In so contending, the examiner appears to take the position that a substrate having an undercoat layer of Takano meets the claimed substrate. We cannot subscribe to the examiner's position.

Yu'481 describes an electrophotographic imaging member which can be used in an electrostatographic process. See column 1, lines 5-7. The electrophotographic imaging member comprises, inter alia, a substrate and a charge transport layer applied by solution coating in methylene chloride. See example 1 at columns 14 and 15. The difference in thermal contraction coefficient

between the substrate and the charge transport layer is plus or minus 2 x 10^{-5}. See column 5, lines 42-46. The substrate materials may have Tg of less than or greater than 90°C. See Table 1 at column 6. The substrate can be sensitive to methylene chloride or can be dissolved or swelled upon contacting methylene chloride. See Table 1 at column 6. Yu'481 does not describe the claimed polymers as substrate materials for its electrophotographic imaging member. Nor does it recognize the importance of using substrates insoluble to methylene chloride.

As indicated by the examiner at page 6 of the Answer, Takano does teach that an alcohol-soluble polyamide, such as nylon-6 and nylon-66, can be used as an undercoat layer to provide an electrostatic charge blocking property and an adhesive property. This teaching is somewhat identical to Yu's disclosure of a blocking layer. Yu' 481, like Takano, teaches a blocking layer, such as polyesters, **polyamides** and polyurethanes, which can function as both an adhesive layer and a charge blocking layer. See the paragraph bridging columns 6 and 7. However, Takano and Yu' 481 do not teach, nor would have suggested, using these blocking layers as the supporting substrate materials for the electrophotographic imaging member of Yu'481.

Even were we to interpret the claimed substrate as inclusive of a substrate having a blocking layer as suggested by the examiner, our conclusion would not be changed. We are of the view that Takano and Yu'481 would not have suggested one of ordinary skill in the art to the claimed electrostatographic imaging member within the meaning of 35 U.S.C. § 103 because neither references requires their charge blocking layers to have a thermal contraction coefficient within $\pm$ 2 x 10^{-5} of the charge transport layer as is with the claimed substrate. Thus, we reverse the examiner's rejection of claims 2, 3, 6 through 13, 21 and 25.

The examiner has also rejected claims 23 and 26 through 29 under 35 U.S.C. § 103 as unpatentable over the combined teachings of Yu'481 and Rodriguez and Billmeyer. The examiner's rejection is predicated on the contention that it would have been obvious to induce cross-linking of the substrate of Yu'481 with gamma radiation as taught by Billmeyer and Rodriguez "since radiation cross-linking has a beneficial effect on the mechanical properties of some polymers." We do not share the examiner's contention.

As indicated by appellants at page 5 of the Reply Brief, neither Billmeyer nor Rodriguez indicates that "the mechanical properties" of the polymer substrates of Yu'481 can be imparted with "a beneficial effect" upon subjecting such substrates to gamma radiation. Nor is there any recognition that this beneficial effect on the mechanical properties would enhance or would not negate the electrophotographic or electrostatographic imaging function of the electrophotographic imaging member described by Yu'481. We simply find no teaching or suggestion which would have led a person having ordinary skill in the art to alter the chemical property of the polymer substrate of the electrophotographic imaging member of Yu'481 using gamma radiation. Accordingly, we reverse the examiner's § 103 rejection of claims 23 and 26 through 29.

Further, the examiner has rejected claim 30 under 35 U.S.C. § 103 as unpatentable over Yu'481 in view of Rodriguez and Billmeyer as applied in the above rejection and further in view of Yu'239. Claim 30 is dependent on claim 26 and further specifies the types of substrates which have been treated with gamma radiation. However, Yu'239 does not remedy the deficiencies of Yu'481, Rodriguez and Billmeyer. Accordingly, we reverse the § 103 rejection of claim 30 as well.

In view of the foregoing, the decision of the examiner is reversed.

EDWARD C. KIMLIN Administrative Patent Judge	)	
CHUNG K. PAK Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
TERRY J. OWENS Administrative Patent Judge	)	

Oliff and Berridge
P.O. Box 19928
Alexandria, VA 22320

CKP/jrg

APPEAL NO. 95-3749 - JUDGE PAK
APPLICATION NO. 07/953,619

APJ PAK

APJ KIMLIN

APJ OWENS

DECISION: **REVERSED**

Typed By: Jenine Gillis

DRAFT TYPED: 12 Jan 99

FINAL TYPED: