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3,257,203
ELECTROPHOTOGRAPHIC REPRODUCTION MATERIAL

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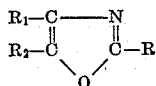
43 Claims. (Cl. 96—1.5)

This invention relates to an electrophotographic reproduction material.

Among modern reproduction processes the electrophotographic process, also known as xerography, is becoming of increasing practical importance. It is a dry process of particular interest in certain fields, for example, in office duplicating, utilizing a reproduction material consisting of a base sheet material and a photoconductive insulating layer adherent thereto. An electrostatic charge is applied to the photo-conductive insulating layer. The charged material is exposed to light beneath an original, so that the electrostatic charge is leaked away in the parts of the layer struck by light. The invisible electrostatic image thereby produced is made visible (developed) by applying a finely divided synthetic resin having an opposite electrostatic charge and given permanent (fixed) for example, by the application of heat to the support to fuse the resin into the base sheet. In some cases, the powder image may be transferred to another sheet before fusing.

Known materials used for the preparation of the photoconductive insulating layers required for the afore-described process include selenium, sulphur, zinc oxide, and also organic substances such as anthracene or anthraquinone. Consideration has also been given to a method of preparing the photoconductive insulating layers whereby the photoconductive substances in association with binders are dispersed in solvents, applied thus to electrically conductive supports, primarily metal foils and dried. However, the electrophotographic material thus obtained has not yet satisfied the extensive demands made of modern duplicating material with respect to range of use, reliability, simplicity in handling, and not least in importance, light sensitivity and keeping qualities.

It has now been found an electrophotographic reproduction material comprising a base material coated with a thin uniform coherent photoconductive insulating layer adhering thereto consisting of at least one substituted oxazole corresponding to the general formula:



in which:

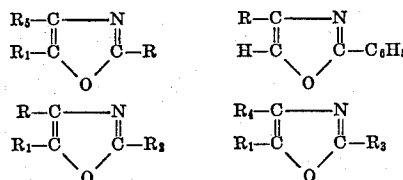
R stands for a residue selected from the group consisting of hydrogen, aryl, alkenyl, alkyl, substituted aryl and heterocyclic radicals,

R₁ stands for a residue selected from the group consisting of hydrogen, alkyl, alkylated aminoaryl and aryl radicals,

R₂ stands for a residue selected from the group consisting of hydrogen, aryl and substituted aryl radicals.

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More specifically it has been found an electrophotographic reproduction material as described above the photoconductive insulating layer of which comprises at least one oxazole compound corresponding to the formulas:



in which:

R stands for aminophenyl, or dialkylaminophenyl radicals, R₁ stands for phenyl or substituted phenyl radicals, R₂ stands for hydrogen, alkyl, alkenyl or heterocyclic radicals,

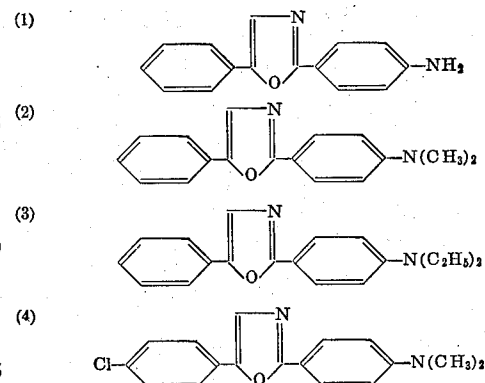
R₃ and R₄ stand for phenyl or substituted phenyl radicals and

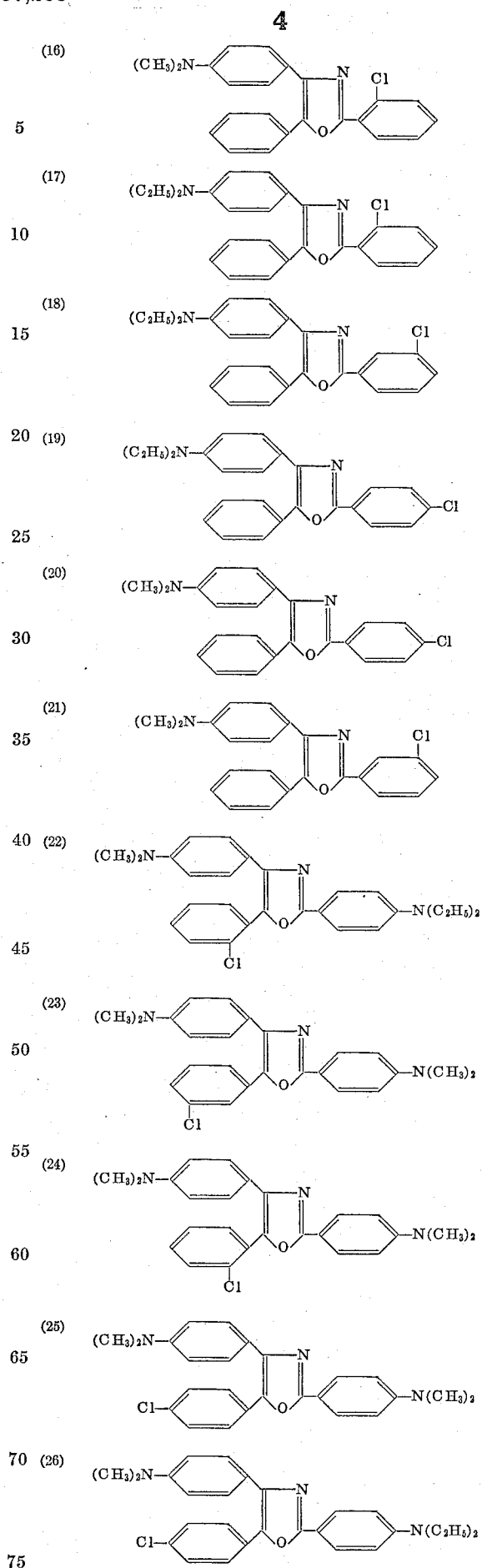
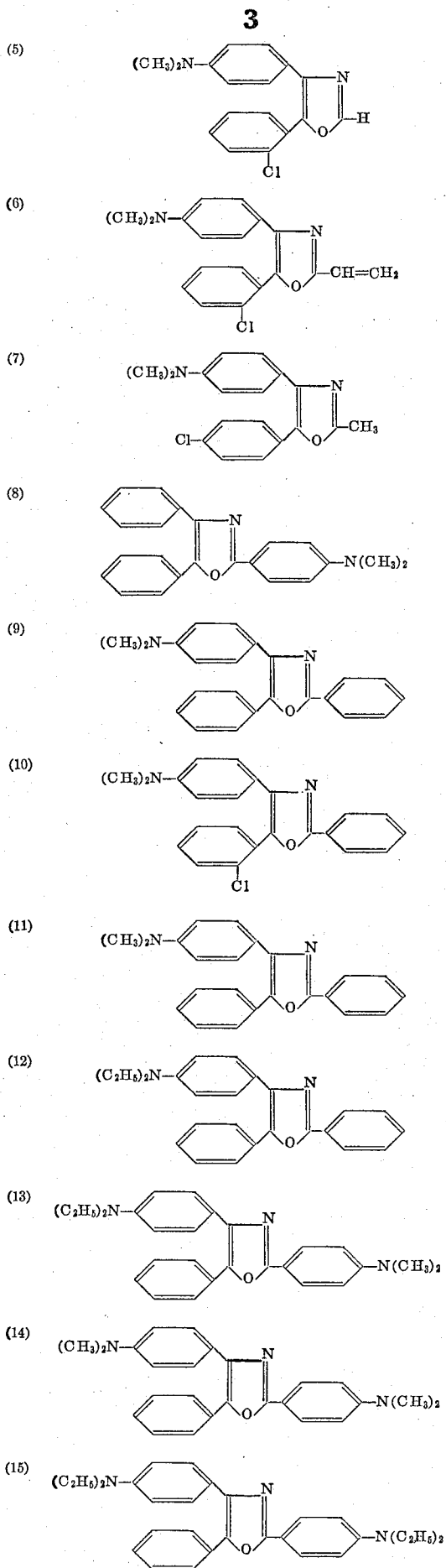
R₅ stands for hydrogen or alkyl radicals.

The compounds to be used according to the present invention have very good photoconductivity and are especially suited for the preparation of homogeneous layers of unlimited shelf life. The color of the compounds in question ranges from colorless to pale yellow to a vivid yellow.

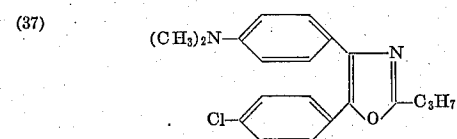
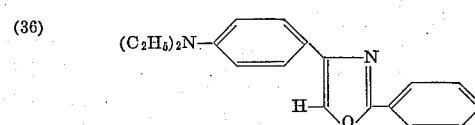
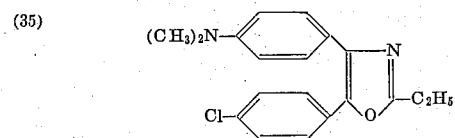
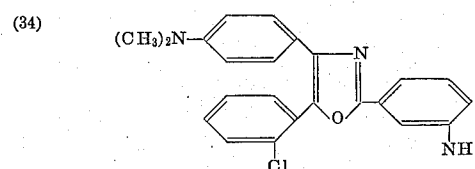
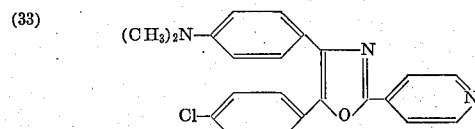
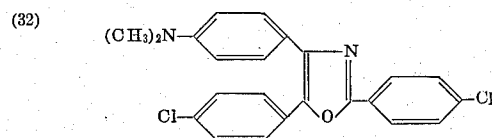
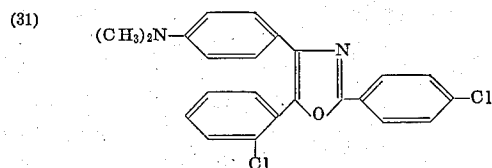
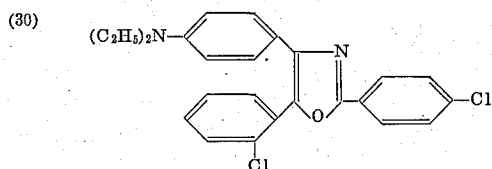
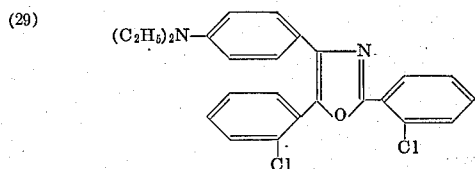
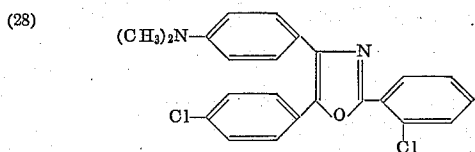
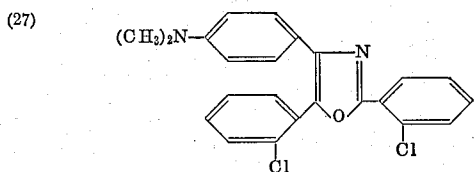
The oxazole substituted compounds which are to be used in accordance with the present invention are prepared in a manner known per se. 2,5-diphenyl-oxazoles of the kind claimed are prepared from an α -acyl-amino ketones by a ring closure with concentrated sulfuric acid, or from aldehydes and aldehyde-cyano-hydrines which are reacted upon with gaseous hydrochloric acid in absolute ether. 4,5-diphenyl-oxazoles according to the present invention are prepared by condensation of benzoines with hydrocyanic acid or with aliphatic nitriles, using sulfuric acid or poly-phosphoric acid as a condensing agent. Analogously, 2,4,5-triphenyl-oxazoles are prepared from benzoines and aromatic nitriles. 2,4-diphenyl-oxazoles to be used according to the present invention are formed when ω -bromo-acetophenone is fused with benzamides. The phenyl groups of the oxazoles may be substituted, e.g. by halogen as fluorine, chlorine, bromine, iodine and by lower alkoxy groups as methoxy, ethoxy, butoxy.

Examples of oxazoles useful according to the invention are tabulated below:

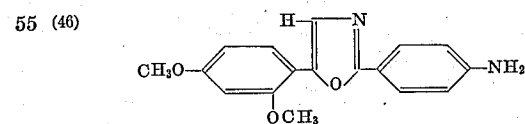
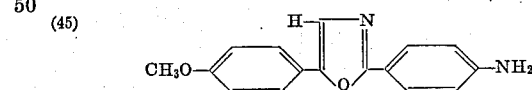
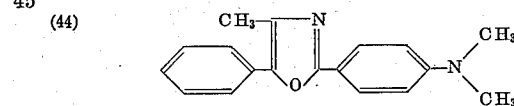
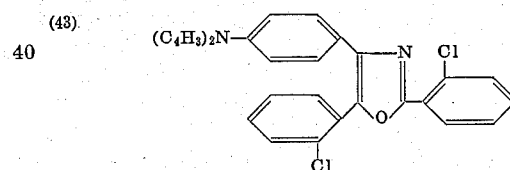
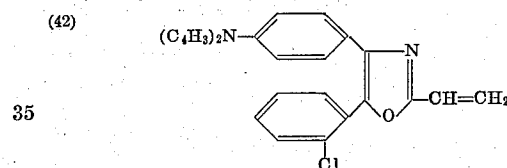
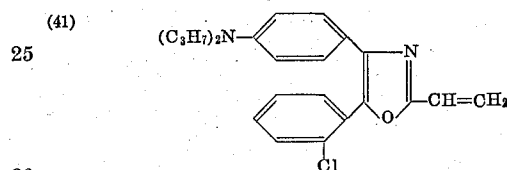
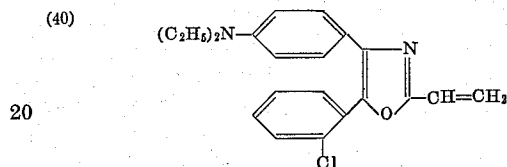
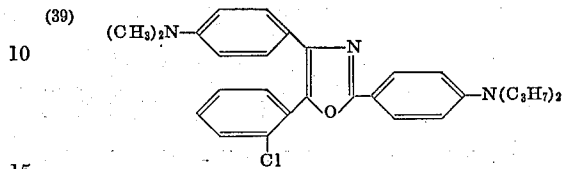
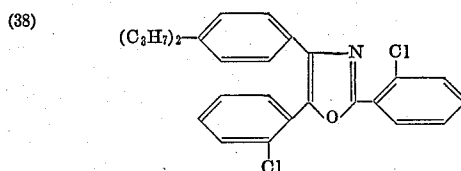




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60 A few of the 2,5-diphenyl-oxazoles are described in the literature. The methods of preparation of compounds corresponding to the above formulae which so far have been unknown, are given below:

2-(4'-aminophenyl)-5-phenyl-oxazole corresponding to
65 Formula 1, melting point 188° C., is prepared from 12.1 grams of 4-aminobenzaldehyde and 13.3 grams of benzaldehydecyano-hydrine by a condensation by means of gaseous hydrochloric acid in absolute ether, while cooling with ice. After several hours the precipitated hydrochloride is filtered off with suction, dissolved in a caustic soda solution, and the oxazole is extracted by ether. The ether solution is agitated with a 30% solution of sodium hydrogen sulfite and dried. After evaporation of the ether, the residue is recrystallized from alcohol.

75 2-(4'-dimethylamino phenyl)-5-phenyl-oxazole corre-

sponding to Formula 2, melting point 118° C., is obtained by ring closure of 4-dimethylamino-benzoyl- ω -amino acetophenone in concentrated sulfuric acid. The above acetophenone is prepared by heating 11 grams of the hydrochloride of 4-dimethyl-amino-benzoylchloride and 8.6 grams of ω -amino-acetophenone-hydrochloride in 75 cc. of pyridine.

2-(4'-diethylamino-phenyl)-5 - phenyl-oxazole corresponding to Formula 3, melting point 79° C., is obtained by condensing 16.5 grams of benzaldehyde-cyanohydrine and 22 grams of 4-diethyl-amino-benzaldehyde by means of gaseous hydrochloric acid in 200 cc. of absolute ether. For purification, the compound is recrystallized from methanol.

2-(4'-dimethylamino-phenyl)-5 - (4' - chlorophenyl)-oxazole corresponding to Formula 4 is prepared from the hereinafter described α -acylaminoketone by ring-closure with concentrated sulfuric acid. After recrystallization from methanol, the compound forms light yellow crystals which melt when heated to 134° C. The α -acylaminoketone used is obtained by reaction of 5 grams of 4-chloro- α -amino-acetophenone hydrochloride with 5.4 grams of dimethylaminobenzoyl chloride.

4-(4'-dimethylaminophenyl)-5 - (2' - chlorophenyl)-oxazole corresponding to Formula 5 is obtained by condensing 20 grams of 2'-chloro-4-dimethylaminobenzoin with 40 grams of potassium cyanide in 500 cc. of concentrated sulfuric acid. After recrystallization from a light petroleum fraction colorless crystals are obtained which melt at 122° C.

2-vinyl-4-(4'-dimethylaminophenyl) - 5 - (2' - chlorophenyl)-oxazole corresponding to Formula 6 is obtained by condensing 5.78 grams of 2'-chloro-4-dimethylaminobenzoin with 1.06 grams of acrylonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from a light petroleum fraction light yellow crystals are obtained which melt at 95° C.

2-methyl-4-(4'-dimethylaminophenyl)-5 - (4' - chlorophenyl)-oxazole corresponding to Formula 7 is obtained by condensing 5.78 grams of 4-chloro-4-dimethylaminobenzoin with 0.82 grams of acetonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from ethanol, colorless crystals are obtained which melt at 134° C.

2-(4'-dimethylaminophenyl)-4,5-diphenyl-oxazole corresponding to Formula 8 is obtained by condensing 6.3 grams benzoin and 4.7 grams of 4-dimethyl-amino-benzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from ethanol, light yellow crystals are obtained which melt when heated to 143° C. First the benzoin and the 4-dimethyl-amino-benzonitrile are intimately ground in a mortar, and then 60 grams of concentrated sulfuric acid are added as a condensing agent and the whole is left to stand for several hours at room temperature. For precipitation of the oxazole, the reaction mixture is cautiously poured onto a mixture of ice and caustic soda solution, while stirring. The precipitated oxazole is filtered off with suction, dried, dissolved in benzene and finally passed through a column filled with Al₂O₃. By this last treatment the resinous products are held back which had been formed during the condensation in concentrated sulfuric acid. The oxazole is removed from the Al₂O₃-column by washing with benzene. After evaporation of the benzene the oxazole is obtained in an almost pure state and may be recrystallized for further purification.

2,5-diphenyl-4-(4'-dimethylaminophenyl)-oxazole corresponding to Formula 9 is obtained by condensing 11 grams of 4-dimethyl-aminobenzoin with 4.7 grams of benzonitrile in 83 grams of concentrated sulfuric acid. After recrystallization from alcohol light yellow crystals are obtained which melt at 108° C.

2-phenyl-4-(4'-dimethylaminophenyl) - 5 - (2'-chlorophenyl)-oxazole corresponding to Formula 10 is obtained in the form of light yellow crystals (melting point 140°

C.) by condensing 9.9 grams of 2'-chloro-4-dimethyl-amino benzoin with 3.5 grams of benzonitrile in 60 grams of concentrated sulfuric acid.

2-phenyl-4-(4'-dimethylaminophenyl) - 5 - (4'-chlorophenyl)-oxazole corresponding to Formula 11 is obtained by condensing 9.9 grams of 4'-chloro-4-dimethylaminobenzoin with 3.5 grams of benzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from ethanol yellow green crystals are obtained which melt at 132° C.

2,5-diphenyl-4-(4'-dimethylaminophenyl)-oxazole corresponding to Formula 12 is obtained by condensing 7.1 grams of 4-diethyl-aminobenzoin with 2.6 grams of benzonitrile in 60 grams of concentrated sulfuric acid. For purification, the compound is dissolved in hydrochloric acid and reprecipitated by adding sodium bicarbonate to the solution.

2-(4'-dimethylaminophenyl) - 4 - (4' - dimethylaminophenyl)-5-phenyl-oxazole corresponding to Formula 13 is obtained by condensing 5.66 grams of 4-diethylaminobenzoin and 2.92 grams of 4-dimethylaminobenzonitrile in 60 grams of concentrated sulfuric acid. For purification, the compound is dissolved in hydrochloric acid and reprecipitated by adding a sodium carbonate solution.

2-(4'-dimethylaminophenyl) - 4 - (4' - dimethylaminophenyl)-5-phenyl-oxazole corresponding to Formula 14 is obtained by condensing 5.1 grams of 4-dimethylaminobenzoin and 2.92 grams of 4-dimethylaminobenzonitrile in 60 grams of concentrated sulfuric acid. For purification, the compound is dissolved in hydrochloric acid and reprecipitated by adding a sodium carbonate solution.

2,4-di-(4'-diethylaminophenyl) - 5 - phenyl - oxazole corresponding to Formula 15 is obtained by condensing 5.66 grams of 4-diethylaminobenzoin and 3.52 grams of 4-diethylaminobenzonitrile in 60 grams of concentrated sulfuric acid at a temperature of 40-50° C. For purification, the compound is dissolved in hydrochloric acid and reprecipitated by adding a sodium carbonate solution.

2-(2'-chlorophenyl) - 4 - (4' - dimethylaminophenyl)-5-phenyl-oxazole corresponding to Formula 16 is obtained by the reaction of 5.1 grams of 4-dimethylaminobenzoin and 2.74 grams of 2-chloro-benzonitrile in concentrated sulfuric acid at slightly elevated temperature. After recrystallization from petroleum ether the compound forms light yellow crystals which melt at 118° C.

2-(2'-chlorophenyl) - 4 - (4' - diethylaminophenyl)-5-phenyl-oxazole corresponding to Formula 17 is prepared by condensing 5.66 grams of 4-diethylaminobenzoin and 2.74 grams of 2-chlorobenzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol the compound forms light yellow crystals which melt at 83° C.

2-(3'-chlorophenyl) - 4 - (4' - diethylaminophenyl) - 5-phenyl-oxazole corresponding to Formula 18 is obtained by condensing 5.66 grams of 4-diethylaminobenzoin and 2.74 grams of 3-chloro-benzonitrile in 60 grams of concentrated sulfuric acid and recrystallization from alcohol. The compound melts at 99° C.

2-(4'-chlorophenyl) - 4 - (4' - diethylaminophenyl) - 5-phenyl-oxazole corresponding to Formula 19 is obtained by condensing 5.66 grams of 4-diethylaminobenzoin and 2.74 grams of 4-chlorobenzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol, colorless crystals are obtained which melt at 135° C.

2-(4'-chlorophenyl) - 4 - (4' - dimethylaminophenyl)-5-phenyl-oxazole corresponding to Formula 20 is obtained by condensing 5.1 grams of 4-dimethylaminobenzoin and 2.74 grams of 4-chlorobenzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol the light yellow compound melts at 147° C.

2-(3'-chlorophenyl) - 4 - (4' - dimethylaminophenyl)-5-phenyl-oxazole corresponding to Formula 21 is obtained by condensing 5.1 grams of 4-dimethylaminobenzoin with 2.74 grams of 3-chlorobenzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from alco-

hol, yellow crystals are formed which melt at 106° C.

2 - (4' - diethylaminophenyl) - 4 - (4' - dimethylaminophenyl) - 5 - (2' - chlorophenyl) - oxazole corresponding to Formula 22 is obtained by condensing 5.78 grams of 2' - chloro - 4 - dimethylaminobenzoin with 5.78 grams of 2' - chloro - 4 - dimethylaminobenzoin with 3.52 grams of 4 - diethylaminobenzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol, light yellow crystals are formed which melt at 138° C.

2 - (4' - dimethylaminophenyl) - 4 - (4' - dimethylaminophenyl) - 5 - (3' - chlorophenyl) - oxazole corresponding to Formula 23 is obtained by condensing 5.78 grams of 4 - dimethylamino - 3' - chlorobenzoin and 2.92 grams of 4 - dimethylaminobenzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol, yellow crystals are formed which melt at 153° C.

2,4 - di - (4' - dimethylaminophenyl) - 5 - (2' - chlorophenyl) - oxazole corresponding to Formula 24 is obtained by the reaction of 5.78 grams of 2' - chloro - 4 - dimethylaminobenzoin with 2.92 grams of 4 - dimethylaminobenzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol, light yellow crystals are formed which melt at 164° C.

2,4 - di - 4' - dimethylaminophenyl) - 5 - (4' - chlorophenyl) - oxazole corresponding to Formula 25 is obtained by condensing 5.78 grams of 4' - chloro - 4 - dimethylaminobenzoin and 2.92 grams of 4 - dimethylaminobenzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol, colorless crystals are obtained which melt at 143° C.

2 - (4' - diethylaminophenyl) - 4 - (4' - dimethylaminophenyl) - 5 - (4' - chlorophenyl) - oxazole corresponding to Formula 26 is obtained by condensing 5.78 grams of 4' - chloro - 4 - dimethylaminobenzoin with 3.5 grams of 4 - diethylaminobenzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol colorless crystals are obtained which melt at 124° C.

2 - (2' - chlorophenyl) - 4 - (4' - dimethylaminophenyl) - 5 - (2' - chlorophenyl) - oxazole corresponding to Formula 27 is obtained by condensing 5.78 grams of 2' - chloro - 4 - dimethylaminobenzoin with 2.74 grams of 2 - chlorobenzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol, the compound melts at 154° C.

2 - (2' - chlorophenyl) - 4 - (4' - dimethylaminophenyl) - 5 - (4' - chlorophenyl) - oxazole corresponding to Formula 28 is obtained by condensing 5.78 grams of 4 - chloro - 4 - dimethylaminobenzoin with 2.74 grams of 2 - chlorobenzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol, the compound forms yellow crystals which melt at 136° C.

2 - (2' - chlorophenyl) - 4 - (4' - diethylaminophenyl) - 5 - (2' - chlorophenyl) - oxazole corresponding to Formula 29 is obtained by condensing 6.34 grams of 2' - chloro - 4 - diethylaminobenzoin with 2.74 grams of 2 - chlorobenzonitrile in 60 grams of concentrated sulfuric acid. The substance is recrystallized from alcohol and melts at 119° C.

2 - (4' - chlorophenyl) - 4 - (4' - diethylaminophenyl) - 5 - (2' - chlorophenyl) - oxazole corresponding to Formula 30 is obtained by condensing 6.34 grams of 2' - chloro - 4 - diethylaminobenzoin with 2.74 grams of 4 - chlorobenzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol yellow crystals are obtained which melt at 107° C.

2 - (4' - chlorophenyl) - 4 - (4' - dimethylaminophenyl) - 5 - (2' - chlorophenyl) - oxazole corresponding to Formula 31 is obtained by condensing 5.78 grams of 2' - chloro - 4 - dimethylaminobenzoin and 2.74 grams of 4 - chlorobenzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol yellow crystals are obtained which melt at 146° C.

2 - (4' - chlorophenyl) - 4 - (4' - dimethylaminophenyl) - 5 - (4' - chlorophenyl) - oxazole corresponding to Formula 32 is obtained by condensing 5.78 grams of 4' - chloro - 4 - dimethylaminobenzoin and 2.74 grams of 4 - chloroben-

zonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol the compound melts at 147° C.

2 - (4' - pyridyl) - 4 - (4' - dimethylaminophenyl) - 5 - (4' - chlorophenyl) - oxazole corresponding to Formula 33 is obtained by condensing 5.78 grams of 4' - chloro - 4 - dimethylaminobenzoin with 2.08 grams of 4 - cyanopyridine in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol yellow crystals are obtained which melt at 168° C.

2 - (3' - aminophenyl) - 4 - (4' - dimethylaminophenyl) - 5 - (2' - chlorophenyl) - oxazole corresponding to Formula 34 is obtained by condensing 5.78 grams of 2' - chloro - 4 - dimethylaminobenzoin with 2.36 grams of 3 - aminobenzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from a mixture of benzene and petroleum ether, the compound forms yellow crystals which melt at 152° C.

2 - ethyl - 4 - (4' - dimethylaminophenyl) - 5 - (4' - chlorophenyl) - oxazole corresponding to Formula 35 is obtained by condensing 5.78 grams of 4' - chloro - 4 - dimethylaminobenzoin and 1.1 grams of ethylcyanide in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol, colorless crystals are obtained which melt at 84° C.

2 - phenyl - 4 - (4' - diethylaminophenyl) - oxazole corresponding to Formula 36 (forms colorless crystals having a melting point of 80° C., if recrystallized from ligroin) is obtained by ethylation of 2.36 grams of 2 - phenyl - 4 - (4' - aminophenyl) - oxazole with 2 grams of ethyl phosphate, 2 - phenyl - 4 - (4' - aminophenyl) - oxazole, in turn, is obtained by catalytic reduction of the corresponding nitro compound, 2 - phenyl - 4 - (4' - nitrophenyl) - oxazole is obtained by fusing together for one hour, at a temperature of 140 - 150° C., 36 grams of 4 - nitro - ω - bromo - acetophenone and 57 grams of benzamide. It is recrystallized from alcohol or acetone and melts at 175° C.

2 - propyl - 4 - (4' - dimethylaminophenyl) - 5 - (4' - chlorophenyl) - oxazole corresponding to Formula 37 is obtained by condensing 1.38 grams of butyronitrile with 5.78 grams of 4' - chloro - 4 - dimethylaminobenzoin in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol, the compound melts at 102° C.

2 - (2' - chlorophenyl) - 4 - (4' - dipropylaminophenyl) - 5 - (2' - chlorophenyl) - oxazole corresponding to Formula 38 is obtained by condensing 6.9 grams of 2' - chloro - 4 - dipropylamino - benzoin and 2.74 grams of 2 - chlorobenzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol weakly yellow colored crystals are obtained which melt at 111° C.

2 - (4' - dipropylaminophenyl) - 4 - (4' - dimethylaminophenyl) - 5 - (2' - chlorophenyl) - oxazole corresponding to Formula 39 is obtained by condensing 5.78 grams of 2' - chloro - 4 - dimethylaminobenzoin with 4.04 grams of 4 - dipropylaminobenzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol, the compound melts at 124° C.

2 - vinyl - 4 - (4' - diethylaminophenyl) - 5 - (2' - chlorophenyl) - oxazole corresponding to Formula 40 is obtained by condensing 6.34 grams of 2' - chloro - 4 - diethylamino - benzoin with 1.06 grams of acrylonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from petroleum ether the compound forms yellow crystals which melt at 104° C.

In analogy to the preparation of the compound corresponding to Formula 40, the compounds corresponding to Formulae 41 and 42 may be prepared. The compound of Formula 41, i.e. the 2 - vinyl - 4 - (4' - dipropylaminophenyl) - 5 - (2' - chlorophenyl) - oxazole, is obtained by condensing 1.06 grams of acrylonitrile with 6.9 grams of 2' - chloro - 4 - dipropylaminobenzoin. After recrystallization from petroleum ether, the compound forms light - yellow crystals which melt at 77° C. The compound of Formula 42, i.e. the 2 - vinyl - 4 - (4' - dibutylaminophenyl) - 5 - (2' - chlorophenyl) - oxazole, is obtained by condensing

1.06 grams of acrylonitrile with 7.5 grams of 2'-chloro-4-dibutylaminobenzoin. By rubbing with some petroleum ether, yellow crystals are obtained which melt at 50-51° C. The compound is very readily soluble in organic solvents and cannot be recrystallized.

2 - (2' - chlorophenyl) - 4 - (4' - dibutylaminophenyl) - 5 - (2' - chlorophenyl) - oxazole corresponding to Formula 43 is obtained by condensing 7.46 grams of 2'-chloro-4-dibutylamino-benzoin with 2.74 grams of chloro-benzonitrile in 60 grams of concentrated sulfuric acid. After recrystallization from alcohol, the compound forms light-yellow crystals which melt at 102° C.

2 - (4' - dimethylaminophenyl) - 4 - methyl - 5 - phenyl-oxazole corresponding to Formula 44 is prepared by condensing in concentrated sulfuric acid the azadiketone obtainable from 9.3 grams of amino-ethyl-phenyl-ketone and 11.0 grams of di-methyl-amino-benzoyl-chloride. After recrystallization from aqueous alcohol, light yellow crystals are obtained which melt at 114° C.

2 - (4' - aminophenyl) - 5 - (4' - methoxy - phenyl) - oxazole corresponding to Formula 45 is prepared by condensing 22.4 grams of 4-nitro-benzamido acetic acid and 11 grams of anisol with 180 grams of polyphosphoric acid for 3 hours at a temperature of 100° C. and after isolating, hydrogenating the nitro compound formed by using Raney nickel as a catalyst and benzene as a solvent. The compound melts at a temperature of 180° C.

2 - (4'-aminophenyl) - 5-(2',4-dimethoxy-phenyl)oxazole corresponding to Formula 46 is prepared by condensing 22.4 grams of 4-nitro-benzamido acetic acid and 13.8 grams of resorcinol dimethyl ether with 180 grams of polyphosphoric acid for 3 hours at a temperature of 75° C. and after isolating, hydrogenating the nitro compound formed, by using Raney nickel as a catalyst and benzene as a solvent. The compound melts at a temperature of 245° C.

The substituted oxazole compounds utilized according to the present invention are advantageously used as a solution in an organic solvent, e.g. benzene, acetone, methylene-chloride, ethyleneglycol monomethylether for coating the base material and evaporating the solvent to form a thin uniform coherent photoconductive layer adhering thereto. Alternatively, the amino-phenyl substituted oxazole compounds utilized according to the present invention may be used in admixture with at least one other organic photoconductive substance.

It has further been found that it may be of advantage in the production of the photoconductive insulating layers to include at least one water-insoluble organic resin in association with the oxazole compound. The following are example of water-insoluble organic resins suitable for this purpose:

Natural and synthetic resins, e.g. balsam resins, phenol resins modified with colophony, and other resins of which colophony constitutes the major part, coumarone resins and indene resins, and the substances covered by the collective term "synthetic lacquer resins," which according to the *Kunststoffaschenbuch* (Plastics Pocket Book) published by Saechtling-Zebrowski (11th edition, Munich, 1955, page 212 forward) include:

- (a) processed natural substances, such as cellulose ether;
- (b) polymers such as the polyvinyl chlorides, polyvinyl acetates, polyvinyl acetals, polyvinyl ethers, polyacrylic and polymethacrylic esters, as also polystyrene and isobutylene;
- (c) polycondensates, e.g. polyesters, such as phthalate resins, alkyd resins, maleinate resins, maleic acid-colophony-mixed esters of higher alcohols, phenol-formaldehyde resins, particularly colophony-modified phenol-formaldehyde condensates, urea-formaldehyde resins, melamine-formaldehyde condensates, aldehyde resins, ketone resins of which particular mention is to be made of AW 2 resins of the firm

Badische Anilin- und Soda-Fabrik, xylene formaldehyde resins and polyamides; and

(d) polyadducts, such as polyurethanes.

If the basically substituted oxazole compounds to be used as provided by the present invention are used in association with organic resins, the proportion of resin to photo-conductive substance may vary very greatly. The use of mixtures of approximately equal parts of resin and oxazole compounds has been found to be advantageous. If the mixtures used consist of about equal parts of resin and oxazole compound, the solutions after coating and drying in most cases form clear layers which can be regarded as "solid solutions."

The base materials used as supports for the photoconductive layer may be any that satisfy the requirements of xerography, e.g., metal or glass plates, paper or plates or foils made of electrically conductive resins, or plastic resin films. To satisfy the requirements of the electrophotographic process the electroconductivity of the base material must be higher than the electroconductivity of the photo-conductive insulating layer, preferably higher than 10¹⁰ohm/cm. If paper is to be used as a support for the photo-conductive layer, pretreatment of the paper against penetration of the coating solution is advisable, e.g. with methyl-cellulose in aqueous solution or polyvinyl alcohol in aqueous solution or with a solution in acetone and methylethylketone of a copolymer of acrylic acid methyl ester and acrylonitrile or with solutions of polyamides in aqueous alcohols. Aqueous dispersions of said substances suitable for the pretreatment of the paper surface may also be used.

The solutions of the compounds of the diphenyl- and triphenyl-oxazole series to be used as provided by the invention, with or without the resins, are applied to the supports in the usual manner, for example by spraying, by brushing, by direct application by means of rollers, etc., and then dried so as to produce a thin coherent homogeneous photo-conductive layer adhering on the electroconductive support.

The photo-conductive layers are generally charged positively or negatively by means of a corona discharge. The thus obtained charged photo-conductive layers have a light-sensitivity generally lying within the range of the long-wave U.V. light of about 3600 to 4200 A.U. Even very short exposure under a master to a high pressure mercury lamp will give good images.

The layers corresponding to the invention have, even when charged, very little sensitivity to the visible range of the spectrum. However, the further discovery has been made that the spectral sensitivity of the photoconductive layer can be extended by means of sensitizers into the visible part of the spectrum. The most suitable sensitizers are certain dyestuffs; for their easier identification the number is given under which they are listed in Schultz' "Farbstofftabellen" (7th edition, 1st vol., Leipzig 1931). The following are given as examples of particularly effective sensitizers:

Triarylmethane dyestuffs, such as Brilliant green (No. 760, p. 314), Victoria blue B (No. 822, page 347), Methyl violet (No. 783, page 327), Crystal violet (No. 785, page 329), Acid violet 6 B, (No. 831, page 351);

Xanthene dyestuffs, namely rhodamines, such as Rhodamine B (No. 864, page 365), Rhodamine 6 G (No. 866, page 366), Rhodamine G extra (No. 865, page 366), Sulfo-rhodamine B (No. 863, page 364), and True acid eosin G (No. 870, page 368), also phthaleins, such as Eosin S (No. 883, page 375), Eosin A (No. 881, page 374), Erythrosin (No. 886, page 376), Phloxin (No. 890, page 378), Rose Bengal (No. 889, page 378), and Fluorescein (No. 880, page 373);

Thiazine dyestuffs, such as Methylene blue (No. 1038, page 449);

Acridine dyestuffs, such as Acridine yellow (No. 901, page 383), Acridine orange (No. 908, page 387), and Trypaflavine (No. 906, page 386);

Quinoline dyestuffs, such as Pinacyanol (No. 924, page 396) and Cryptocyanine (No. 927, page 397);

Quinone dyestuffs and ketone dyestuffs, such as Alizarin (No. 1141, page 499), Alizarin red S (No. 1145, page 502) and Quinizarine (No. 1148, page 504);

Cyanine dyestuffs, e.g. Cyanine (No. 921, page 394) and Chlorophyll.

The production of images by electrophotographic means may be carried out as follows: When the photoconductive layer has been provided with an electrostatic charge by means of, for example, a corona discharge with a charging apparatus maintained at 6000-7000 volts, the support, e.g. paper or aluminum foil or plastic film, with the sensitized layer is exposed to light through a master or by episcopic or diascopic projection to form an electrostatic pattern corresponding to the master applied by causing to leak away the electrostatic charge on the areas of the photoconductive layer struck by light and then developing the electrostatic pattern by dusting over in known manner with a resin powder colored with carbon black. The image that now becomes visible by the adherent particles of the resin powder can easily be wiped off. It therefore has to be fixed; it can, for example, be heated briefly, by means of an infra-red radiator, to about 120° C., or to whatever the baking temperature of the developer powder used may be. The temperature required is less if the heat treatment is carried out in the presence of vapors of solvents such as trichloroethylene, carbon tetra-chloride or ethyl alcohol. Steam fixing of the powdered image is also possible. The electrostatic pattern may also be developed by means of a liquid developer consisting of a solvent of low electroconductivity and a suspended dyestuff or pigment and/or resin. From positive masters, positive images characterized by good contrast are produced.

It is a special advantage of the electrophotographic images prepared in accordance with the present invention that the fixed images may be transformed in printing plates: the support, e.g. the paper or plastic film, is wiped over with a solvent for the photoconductive layer, e.g. alcohol or acetic acid. By this treatment, the non-image areas of the layer are removed, so that the support may now be rinsed with water. Subsequently, the support is inked in known manner with greasy ink which sticks to the imaged areas. In this way positive printing plates are obtained which can be set up in an offset machine and used for printing. They give very long runs.

If light transmitting supports are used, the electrophotographic images can also be used as masters for the production of further copies of any sort of light sensitive sheets. In this respect the photoconductive compounds to be used as provided by the invention are superior to the substances used hitherto, such as selenium or zinc oxide, inasmuch as the latter give cloudy layers which are not easy to be copied because solid solutions cannot be produced with such materials and only suspensions are possible.

If translucent supports are used for photoconductive layers such as are provided by the invention, reflex images can be produced also. The possibility of a reflex copy is also an advantage over the known art.

Moreover, the photoconductive layers prepared as provided by the invention have a further important advantage in that they can be charged positively as well as negatively. With positive charging, the images are particularly good and almost no ozone evolves. While with negative charging, ozone evolution is very copious and special measures are required, such as forced ventilation to remove it from the area.

EXAMPLES

(1) In 100 grams of methylethylketone there are dissolved 10 grams of after-chlorinated acetone-soluble polyvinyl chloride ("RHENOFLEX"). To this solution there

is first added a solution of 10 grams of 2-(4'-dimethylaminophenyl)-5-phenyl-oxazole corresponding to Formula 2 in 200 grams of toluene and then a solution of 0.015 gram of Victoria blue (Schultz' "Farbstofftabellen," 7th edition, vol. 1, 1931, No. 822), in 2 grams of methanol. By means of a suitable apparatus the mixture thus obtained is coated onto paper to form a layer of about 6 microns thickness. After drying the coated layer, the paper is given a positive electric charge by means of a corona discharge. Thereafter a latent electrostatic image of a printed book page is produced on the paper by means of an episcopic process. The coated side of the paper is then treated with a developer consisting of very small glass balls melt-coated with a resin and of a very finely divided resin-carbon black mixture electrostatically adhering thereto. The black resin sticks to those areas of the layer which had not been exposed to light during exposure and a positive reproduction of the book page used as an original becomes visible. The copy is warmed gently and thus fixed. The image thus obtained shows good contrast.

(2) 1 gram of 2-(4'-diethylaminophenyl)-5-phenyl-oxazole corresponding to Formula 3, 1 gram of a ketone formaldehyde resin with a melting point of 105-115° C., a dye number 0-2 and a saponification number 0 (Kunsthartz SK). 0.02 gram of Rhodamine B extra (Schultz' "Farbstofftabellen," 7th edition, vol. 1, 1931, No. 864) are dissolved in 30 cc. of benzene. The solution thus obtained is used for coating an opaque paper, which is permeable to light rays and the surface of which has been pretreated to prevent penetration of organic solvents. The coating is applied by means of an apparatus and has a thickness of about 6 microns. By means of a corona discharge the paper thus coated is given a negative electrical charge and then placed with its coated side onto a book page printed on both sides and backed with black paper. Through the coated paper placed thereon, the book page is exposed for one second to the light of a 100 watt incandescent lamp. The electrostatic reflex image thus produced on the paper is dusted with a developer powder consisting of 100 grams of glass balls (grain size 350 to 400 microns) and 2.5 grams of a toner powder (grain size 20 to 50 microns). The toner is prepared by melting together 30 grams of polystyrol, 30 grams of a resin-modified maleic resin having a melting point at 95-105° C., a saponification number 20-25 (Beckacite K 105), and 3 grams of a carbon black produced from natural gas by impingement process (Peerless Black Russ 552), whereupon the melt is ball-milled and sifted. A positive reverse image of the book page is obtained. By firmly pressing paper or a plastic film or a fabric onto the powder image obtained, the image is transferred and a non-reversed image of the original becomes visible on the paper or the film or the fabric, respectively. As is well known, the transfer of the reverse powder-image can be favorably influenced by applying an electric field to the transfer paper or the film to carry the non-reversed image. If a transparent paper or film is used, intermediate originals are obtained from which further copies can be made, e.g. by means of a diazotype process.

(3) 1 gram of 2-(4'-diethylaminophenyl)-4-(4'-dimethylaminophenyl)-5-(2'-chlorophenyl)-oxazole corresponding to Formula 22 and 1 gram of an acetophenone-formaldehyde condensation product having a melting point of 76-82° C., a dye number 1-2.5 and a saponification number 0 (Kunsthartz AP) are dissolved in 30 cc. of benzene. About 15 cc. of this solution are coated onto a DIN A 4 sheet (210 mm. x 297 mm.) of a base paper the surface of which had been pretreated to prevent penetration of organic solvents. After drying the coated paper may be used for the production of electrophotographic images in accordance with the method described in Example 1.

By placing a sheet of paper onto an electrostatic image

which had been prepared and then dusted with a carbon black resin powder in accordance to the procedure described above, but not fixed, and subjecting this second sheet to a corona discharge the carbon-black resin powder image is transferred from the electrophotographic layer onto the paper to form a reverse image on said paper. If the carbon-black-resin-image is thus transferred onto transparent paper or plastic film, the image obtained can be used for making further copies, e.g. on diazo printing paper.

(4) 1 gram of 2-(4'-dimethylaminophenyl)-4-(4'-dimethylaminophenyl)-5-phenyl-oxazole corresponding to Formula 14 and 1 gram of a resin-modified maleic resin, having a melting point at 95-105° C., a saponification number 20-25 ("Beckacite K 105"), are dissolved in 30 cc. of benzene. The solution is coated onto transparent paper the surface of which had been pretreated to prevent penetration of organic solvents, and dried. By means of an electrophotographic process, images are produced on the transparent paper thus coated. Said images are then developed in a manner known per se and fixed, either by heating or by treatment with vapors of trichloro-ethylene and show good contrast. They may be used as intermediate originals for making further copies, e.g. on diazo printing paper.

(5) 1 gram of 2-(4'-dimethylaminophenyl)-4-(4'-diethylaminophenyl)-5-phenyl-oxazole corresponding to Formula 13 and 1 gram of a hard clear coumarone resin, ("Cumaronharz 401/70") are dissolved in 30 cc. of benzene. About 15 cc. of this solution are coated onto a DIN A 4 sheet of paper the surface of which had been pretreated to prevent penetration of organic solvents, and the coating is then dried to form a layer. The coated paper may be used for the production of electrophotographic images, which are developed by means of a developer powder and then fixed by treatment with vapors of organic solvents, e.g. trichloroethylene.

(6) 1 gram of 2-(2'-chlorophenyl)-4-(4'-dimethylaminophenyl)-5-phenyl-oxazole corresponding to Formula 16 and 1 gram of ketone-formaldehyde resin, having a melting point at 115-120° C., a dye number 10-20 and a saponification number 0 ("Kunstharz EM"), are dissolved in 30 cc. of ethylene-glycol monomethylether. The solution is then coated onto an aluminum foil. After evaporation of the solvent a firmly adhering layer has formed on the surface of the foil. The aluminum foil thus coated can be used for the production of images by means of an electrophotographic process known per se. From the images thus obtained copies with good contrast can be made on paper by means of a transfer process.

(7) 1 gram of 2-(4'-dimethylaminophenyl)-4-(4'-dimethylaminophenyl)-5-(2'-chlorophenyl)-oxazole corresponding to Formula 24 and 1 gram of a zinc resin, a neutral zinc modification product of natural resin having a melting point at a so-called "Koflerbank" of 170/150° C. and a saponification number of 0 ("Erkazit-Zinkharz" 165) are dissolved in 30 cc. of ethylene-glycol monomethylether. The solution is then coated onto a base paper prepared according to one of the U.S. Patents No. 2,534,650, No. 2,681,617, or No. 2,559,610. After evaporation of the solvent a firmly adherent layer remains on the paper surface. By means of an electrophotographic process, direct images of originals are produced on this coated paper, which images are developed and fixed in a manner known per se and show good contrast. After fixation the images may be transferred into printing plates, by wiping the paper over with 96% alcohol, thoroughly rinsing with water and then inking with greasy ink in the presence of 1% phosphoric acid. Thus positive printing plates are obtained which may be clamped in an offset printing machine and used for printing.

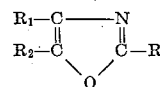
(8) 1 gram of 2-(2'-chlorophenyl)-4-(4'-dimethylamino-phenyl)-5-(2'-chlorophenyl)-oxazole corresponding to Formula 27 and 1 gram of 2-(2'-chlorophenyl)-

4-(4'-diethylaminophenyl)-5-(2'-chlorophenyl)-oxazole corresponding to Formula 29 are dissolved in 30 cc. of benzene. The solution is coated onto an aluminum foil the surface of which has been made grease-free, and is then dried. By means of an electrophotographic process an image of an original is produced on the coated foil and the image is developed by a powder-treatment and fixed by heating. Subsequently, it is transformed into a printing plate by wiping over the image side of the aluminum foil with 96% alcohol, rinsing with water and inking with greasy ink in the presence of 1% phosphoric acid. A positive printing plate is obtained which may be used for printing after clamping it into an offset printing machine.

(9) 1 gram of 2-vinyl-4-(4'-diethylaminophenyl)-5-(2'-chlorophenyl)-oxazole corresponding to Formula 40 and 1 gram of chlorinated polyvinyl chloride are dissolved in 30 cc. of toluene and a base paper which has been pretreated to prevent the penetration of organic solvents is coated with this solution. After drying, the coated layer is given a negative electrostatic charge by means of a corona discharge and then exposed for 1 second to the light of a 125 watt high pressure mercury lamp through a master. The invisible electrostatic charge image thus produced is dusted over with a colored resin powder. The powder image formed, which can be easily wiped off, is fixed by an after-treatment with heat.

Having thus described the invention what is claimed is:

1. An electrophotographic reproduction material comprising a conductive base material coated with a thin uniform coherent photoconductive insulating layer adhering thereto including at least one compound selected from the group consisting of an organic water-insoluble resin and a sensitizing dyestuff in admixture with at least one substituted oxazole compound corresponding to the general formula:



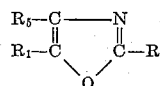
in which:

R stands for a residue selected from the group consisting of hydrogen, aryl, alkenyl, alkyl, and heterocyclic groups,

R₁ stands for a residue selected from the group consisting of hydrogen, alkyl, and aryl groups, and

R₂ stands for a residue selected from the group consisting of hydrogen and an aryl group, the compound containing at least two aryl groups.

2. An electrophotographic reproduction material comprising a conductive base material coated with a thin uniform coherent photoconductive insulating layer adhering thereto including at least one compound selected from the group consisting of an organic water-insoluble resin and a sensitizing dyestuff in admixture with at least one substituted oxazole compound corresponding to the general formula:



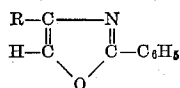
in which:

R is an aminophenyl group, R₁ is a phenyl group and R₅ is hydrogen.

3. An electrophotographic reproduction material comprising a conductive base material coated with a thin uniform coherent photoconductive insulating layer adhering thereto including at least one compound selected from the group consisting of an organic water-insoluble resin and a sensitizing dyestuff in admixture with at least one

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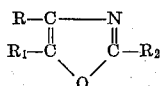
substituted oxazole compound corresponding to the general formula:



in which:

R is an aminophenyl group.

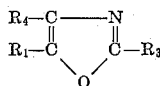
4. An electrophotographic reproduction material comprising a conductive base material coated with a thin uniform coherent photoconductive insulating layer adhering thereto including at least one compound selected from the group consisting of an organic water-insoluble resin and a sensitizing dyestuff in admixture with at least one substituted oxazole compound corresponding to the general formula:



in which:

R is an aminophenyl group, R₁ is a phenyl group and R₂ is an alkyl group.

5. An electrophotographic reproduction material comprising a conductive base material coated with a thin uniform coherent photoconductive insulating layer adhering thereto including at least one compound selected from the group consisting of an organic water-insoluble resin and a sensitizing dyestuff in admixture with at least one substituted oxazole compound corresponding to the general formula:



in which:

R₁, R₃, and R₄ are phenyl groups.

6. An electrophotographic reproduction material according to claim 1, in which the oxazole compound is 2-(4'-diethyl-aminophenyl)-5-phenyl-oxazole.

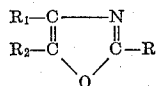
7. An electrophotographic reproduction material according to claim 1, in which the oxazole compound is 2-(2'-chlorophenyl)-4-(4'-diethylaminophenyl)-5-phenyl-oxazole.

8. An electrophotographic reproduction material according to claim 1, in which the oxazole compound is 2-(4'-dimethyl-aminophenyl)-4-(4'-dimethylaminophenyl)-5-(2'-chlorophenyl)-oxazole.

9. An electrophotographic reproduction material according to claim 1, in which the oxazole compound is 2-(2'-chlorophenyl)-4-(4'-dimethyl-aminophenyl)-5-(4'-chlorophenyl)-oxazole.

10. An electrophotographic reproduction material according to claim 1, in which the oxazole compound is 2-vinyl-4-(4'-diethylamino-phenyl)-5-(2'-chlorophenyl)-oxazole.

11. An electrophotographic reproduction process which comprises electrostatically charging a thin uniform coherent photoconductive insulating layer adherent on a conductive base material, said photoconductive layer comprising at least one substituted oxazole compound corresponding to the general formula:



in which:

R stands for a residue selected from the group consisting of hydrogen, aryl, alkenyl, alkyl, and heterocyclic groups,

R₁ stands for a residue selected from the group consisting of hydrogen, alkyl, and aryl groups, and

R₂ stands for a residue selected from the group consisting of hydrogen and an aryl group, the compound containing at least two aryl groups,

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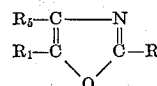
exposing the charged layer to a light pattern to leak away the electrostatic charge on the areas struck by light, developing the remaining charged areas with electroscopic material and fixing the image thus obtained.

12. A process according to claim 11, in which the photoconductive insulating layer contains a water-insoluble organic resin.

13. A process according to claim 11 in which the photoconductive insulating layer contains a dyestuff that sensitizes the layer to visible light.

14. A process according to claim 11 in which the photoconductive insulating layer contains a water-insoluble organic resin and a dyestuff that sensitizes the layer to visible light.

15. An electrophotographic reproduction process which comprises electrostatically charging a thin uniform coherent photoconductive insulating layer adherent on a conductive base material, said photoconductive layer comprising at least one substituted oxazole compound corresponding to the general formula:

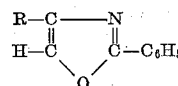


in which:

R is an aminophenyl group, R₁ is a phenyl group and R₅ is hydrogen,

exposing the charged layer to a light pattern to leak away the electrostatic charge on the areas struck by light and developing the remaining charged areas with an electroscopic material and fixing the image thus obtained.

16. An electrophotographic reproduction process, which comprises electrostatically charging a thin uniform coherent photoconductive insulating layer adherent on a conductive base material, said photoconductive layer comprising at least one substituted oxazole compound corresponding to the general formula:

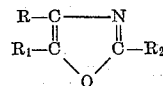


in which:

R is an aminophenyl group,

exposing the charged layer to a light pattern to leak away the electrostatic charge on the areas struck by light and developing the remaining charged areas with an electroscopic material and fixing the image thus obtained.

17. An electrophotographic reproduction process which comprises electrostatically charging a thin uniform coherent photoconductive insulating layer adherent on a conductive base material, said photoconductive layer comprising at least one substituted oxazole compound corresponding to the general formula:

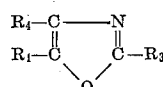


in which:

R is an aminophenyl group, R₁ is a phenyl group and R₂ is an alkyl group,

exposing the charged layer to a light pattern to leak away the electrostatic charge on the areas struck by light and developing the remaining charged areas with an electroscopic material and fixing the image thus obtained.

18. An electrophotographic reproduction process which comprises electrostatically charging a thin uniform coherent photoconductive insulating layer adherent on a conductive base material, said photoconductive layer comprising at least one substituted oxazole compound corresponding to the general formula:



in which:

R_1 , R_3 , and R_4 are phenyl groups, exposing the charged layer to a light pattern to leak away the electrostatic charge on the areas struck by light and developing the remaining charged areas with an electroscopic material and fixing the image thus obtained.

19. A process according to claim 11 in which the photoconductive layer comprises 2-(4'-diethyl-aminophenyl)-5-phenyl-oxazole.

20. A process according to claim 12 in which the photoconductive layer comprises 2-(4'-diethyl-aminophenyl)-5-phenyl-oxazole.

21. A process according to claim 13 in which the photoconductive layer comprises 2-(4'-diethyl-aminophenyl)-5-phenyl-oxazole.

22. A process according to claim 14 in which the photoconductive layer comprises 2-(4'-diethyl-aminophenyl)-5-phenyl-oxazole.

23. A process according to claim 11 in which the photoconductive layer comprises 2-(2'-chlorophenyl)-4-(4'-diethyl-aminophenyl)-5-phenyl-oxazole.

24. A process according to claim 12 in which the photoconductive layer comprises 2-(2'-chlorophenyl)-4-(4'-diethyl-aminophenyl)-5-phenyl-oxazole.

25. A process according to claim 13 in which the photoconductive layer comprises 2-(2'-chlorophenyl)-4-(4'-diethyl-aminophenyl)-5-phenyl-oxazole.

26. A process according to claim 11 in which the photoconductive layer comprises 2-(2'-chlorophenyl)-4-(4'-diethyl-aminophenyl)-5-phenyl-oxazole.

27. A process according to claim 11 in which the photoconductive layer comprises 2-(4'-dimethyl-aminophenyl)-4-(4'-dimethyl-aminophenyl)-5-(2'-chlorophenyl)-oxazole.

28. A process according to claim 12 in which the photoconductive layer comprises 2-(4'-dimethyl-aminophenyl)-4-(4'-dimethyl-aminophenyl)-5-(2'-chlorophenyl)-oxazole.

29. A process according to claim 13 in which the photoconductive layer comprises 2-(4'-dimethyl-aminophenyl)-4-(4'-dimethyl-aminophenyl)-5-(2'-chlorophenyl)-oxazole.

30. A process according to claim 11 in which the photoconductive layer comprises 2-(4'-dimethyl-aminophenyl)-4-(4'-dimethyl-aminophenyl)-5-(2'-chlorophenyl)-oxazole.

31. A process according to claim 11 in which the photoconductive layer comprises 2-(2'-chlorophenyl)-4-(4'-dimethyl-aminophenyl)-5-(4'-chlorophenyl)-oxazole.

32. A process according to claim 12 in which the photoconductive layer comprises 2-(2'-chlorophenyl)-4-(4'-dimethyl-aminophenyl)-5-(4'-chlorophenyl)-oxazole.

33. A process according to claim 13 in which the photoconductive layer comprises 2-(2'-chlorophenyl)-4-(4'-dimethyl-aminophenyl)-5-(4'-chlorophenyl)-oxazole.

34. A process according to claim 14 in which the photoconductive layer comprises 2-(2'-chlorophenyl)-4-(4'-dimethyl-aminophenyl)-5-(4'-chlorophenyl)-oxazole.

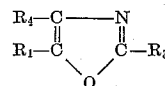
35. A process according to claim 11 in which the photoconductive layer comprises 2-vinyl-4-(4'-diethyl-aminophenyl)-5-(2'-chlorophenyl)-oxazole.

36. A process according to claim 12 in which the photoconductive layer comprises 2-vinyl-4-(4'-diethyl-aminophenyl)-5-(2'-chlorophenyl)-oxazole.

37. A process according to claim 13 in which the photoconductive layer comprises 2-vinyl-4-(4'-diethyl-aminophenyl)-5-(2'-chlorophenyl)-oxazole.

38. A process according to claim 14 in which the photoconductive layer comprises 2-vinyl-4-(4'-diethyl-aminophenyl)-5-(2'-chlorophenyl)-oxazole.

39. A compound having the formula



in which:

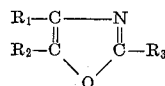
R_1 , R_3 , and R_4 are phenyl groups.

40. The compound 2-(2'-chlorophenyl)-4-(4'-diethyl-aminophenyl)-5-phenyl-oxazole.

41. The compound 2-(4'-dimethyl-aminophenyl)-4-(4'-dimethylaminophenyl)-5-(2'-chlorophenyl)-oxazole.

42. The compound 2-(2'-chlorophenyl)-4-(4'-dimethyl-aminophenyl)-5-(4'-chlorophenyl)-oxazole.

43. A photographic reproduction process which comprises exposing an electrostatically charged photoconductive insulating layer to a light image whereby the light-struck area is discharged, and developing the resulting electrostatic image with an electroscopic material, said layer comprising a compound having the formula:



wherein R_1 is selected from the group consisting of hydrogen, an alkyl group and an aryl group; R_2 is selected from the group consisting of hydrogen and an aryl group; R_3 is a member selected from the group consisting of hydrogen, an alkyl group, an aryl group, and a heterocyclic group, wherein at least two of R_1 , R_2 and R_3 are aryl groups.

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