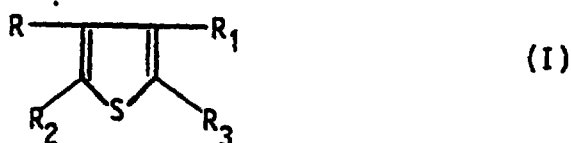


THIOPHENE CONTAINING COMPOUNDS FOR USE AS DISPERSE DYES OR
FOR PREPARING DISPERSE DYES

The invention relates to thiophene containing compounds for use as disperse dyes or for preparing disperse dyes.

According to the invention there is provided a compound of
5 formula I



in which R is halogen,

R₁ is cyano, C₁₋₆alkoxycarbonyl, C₃₋₆alkenyloxy-carbonyl, aminocarbonyl, C₁₋₄alkylsulphonyl, phenylsulphonyl, C₁₋₄alkyl- or phenyl-carbonyl; or phenyl-, mono-C₁₋₄alkyl- or di-C₁₋₄alkyl-aminocarbonyl; or benzyloxycarbonyl;

R₂ is formyl, cyano, -CH=C(R₄)₂; or -CH=N-OH;

R₃ is -N=N-K or -NH₂;

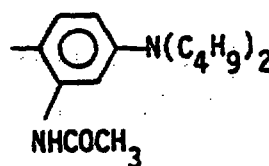
K is a coupling component radical;

each R₄ independently, is cyano, C₁₋₆alkoxycarbonyl, C₃₋₆alkenyloxycarbonyl or C₃₋₆alkynyloxycarbonyl or one R₄ is cyano and the other R₄ is benzoyl unsubstituted or mono-substituted by C₁₋₄alkoxycarbonyl; C₁₋₄alkylsulphonyl; phenylsulphonyl; or amino-

carbonyl unsubstituted or mono-substituted by C_{1-4} alkyl or phenyl;
or one R_4 is hydrogen and the other R_4 is benzoyl unsubstituted or
mono-substituted by C_{1-2} alkoxy carbonyl, halogen, C_{1-4} alkyl or $-NO_2$;
or C_{1-4} alkyl carbonyl or C_{3-6} alkenyl carbonyl; or one R_4 is nitro and
5 the other R_4 is hydrogen, methyl or ethyl;

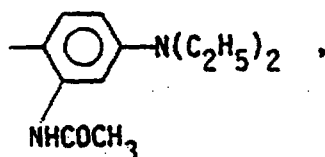
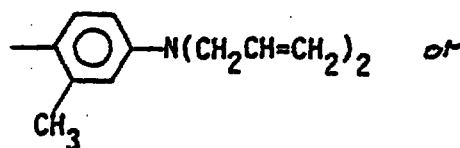
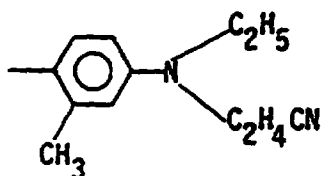
with the provisos that

i) when R_1 is methylsulphonyl, R_2 is formyl ^{and} R is chloro,
then R_3 is $-N=N-K$ where K is not



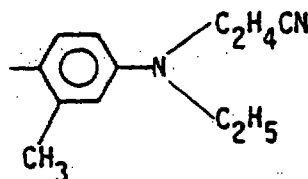
ii) when R_1 is methylsulphonyl, R_2 is $-\text{CH}=\text{C}$ ^{or formyl}
 R_3 is $-N=N-K$ where K is not

10 and R is chloro, then K is not



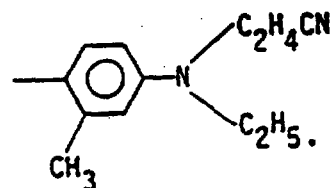
iii) when R_1 is methylsulphonyl, R_2 is $-\text{CH}=\text{C}$ ^{and}
 R_3 is $-N=N-K$ where K is not

R is Br, then K is not



iv) when R_1 is methylsulphonyl, R_2 is formyl ^{and} R is bromo, then

R_3 is $-N=N-K$ where K is not



In this Specification any alkoxy carbonyl, alkenyloxy carbonyl, phenoxy alkyl carbonyl, phenoxy carbonyl, alkyl aminocarbonyl, alkyl-
 5 sulphonyl, phenylsulphonyl or alkynyloxy carbonyl is unsubstituted or substituted by 1 or 2 substituents selected from Cl, Br, C_{1-4} alkyl; C_{1-4} alkoxy, hydroxyl, cyano and acyl, for example $-C(=O)-C_{1-4}$ alkyl or $-C(=O)-C_{1-4}$ alkoxy, unless indicated to the contrary.

For the avoidance of doubt any group capable of being linear
 10 or branched is linear or branched unless indicated to the contrary.

In this Specification halogen is chloro or bromo, more preferably chloro.

Preferably any alkyl group is C_{1-2} alkyl.

Preferably any alkenyl group is C_{3-4} alkenyl.

15 Preferably any alkoxy group is C_{1-2} alkoxy.

Preferably any alkynyl group is C_{3-4} alkynyl.

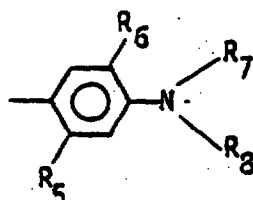
In the compounds of formula I preferably R_1 is R_1' where R_1' is cyano, C_{1-4} alkoxy carbonyl, C_{3-4} alkenyloxy carbonyl, C_{1-4} alkoxy-
 C_{2-4} alkoxy carbonyl, benzyloxy carbonyl, mono C_{1-4} alkyl aminocarbonyl,
 20 C_{1-4} alkylsulphonyl or phenylsulphonyl. More preferably R_1 is R_1'' where R_1'' is cyano, C_{1-2} alkoxy carbonyl, mono C_{1-2} alkyl aminocarbonyl, C_{1-2} alkylsulphonyl or phenylsulphonyl. Most preferably R_1 is R_1''' where R_1''' is cyano or C_{1-2} alkoxy carbonyl.

R_2 is preferably R_2' where R_2' is formyl, cyano, $-\text{CH}=\text{C}(\text{R}_4')_2$ where each R_4' , independently, is cyano, C_{1-6} alkoxy carbonyl, C_{3-6}

alkenyloxycarbonyl or C_{1-4} alkoxyethoxy carbonyl or one R_4' is nitro and the other R_4' is hydrogen. More preferably R_2 is R_2'' where R_2'' is -CHO or CN. Most preferably R_2 is -CHO.

R_4 is preferably R_4' defined above, more preferably R_4'' where one R_4'' is cyano and the other R_4'' is C_{1-6} alkoxycarbonyl.

K is preferably K' where K' is a coupling component radical of the aniline, α -naphthylamino, pyrazole, aminopyrazole, indole, tetrahydroquinoline, thiazole, phenol, naphthol, benzomorpholine or pyridine series. More preferably K is K'' where K'' is a group of formula a



(a)

in which R_5 is hydrogen, C_{1-2} alkyl, C_{1-2} alkoxy, formylamino, C_{1-4} alkylcarbonylamino in which the alkyl group is unsubstituted or mono-substituted by -OH, Cl, Br, C_{1-4} alkoxy, phenyl, phenoxy, benzyloxy or C_{1-2} alkoxycarbonyl; benzoylamino, acryloylamino, amino-carbonylamino, C_{1-4} alkylaminocarbonylamino, C_{1-4} alkoxycarbonylamino in which the alkoxy group is unsubstituted or mono-substituted by C_{1-2} alkoxy or phenyl; C_{1-2} alkyl- or phenyl-sulphonylamino; di- $(C_{1-2}$ alkyl)aminosulphonylamino; fluoro, chloro or bromo;

R_6 is hydrogen, fluoro, chloro, bromo, C_{1-2} alkyl, C_{1-4} alkoxy or C_{1-2} alkoxyethoxy provided that when R_5 is fluoro, chloro or bromo, R_6 is other than fluoro, chloro or bromo;

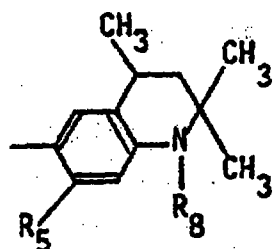
R_7 is hydrogen, unsubstituted C_{1-10} alkyl; C_{2-10} alkyl mono-substituted by chloro, bromo, hydroxyl, cyclohexyl, SCN, cyano, C_{1-4} alkylcarbonyl, C_{1-4} alkoxycarbonyl, formyloxy, C_{1-10} alkylcarbonyloxy, chloro- or bromo- C_{1-3} alkylcarbonyloxy, C_{1-10} alkoxycarbonyloxy, C_{1-2} alkoxyethoxycarbonyl, C_{3-4} alkenyloxycarbonyl, chloro- or bromo-allyloxycarbonyl, C_{3-4} alkenyloxy, chloro- or bromo- allyloxy,

propynyloxy, benzyloxy, benzoyloxycarbonyl, C₁₋₁₀alkoxy, phenyl, phenoxy or phenyl-C₁₋₄alkoxy; or di-substituted by chloro, bromo, hydroxyl, formyloxy, chloro- or bromo-C₁₋₃alkylcarbonyloxy, C₁₋₄-alkoxycarbonyloxy, C₁₋₄alkylcarbonyloxy, or C₁₋₂alkoxyethoxy-carbonyloxy or chloro- or bromo-allyloxycarbonyl; C₃₋₄alkynyloxy; C₁₋₄alkoxyC₂₋₆alkyl in which the alkyl group of the alkoxy is monosubstituted by chloro, bromo, cyano, C₁₋₄alkoxy, C₁₋₄alkoxycarbonyl, C₁₋₄alkoxycarbonyloxy or C₁₋₄alkylcarbonyloxy; β-(C₁₋₄alkoxycarbonylmethoxycarbonyl)ethyl; C₃₋₄alkenyl, unsubstituted or monosubstituted by phenyl, chloro or bromo; propynyl; C₃₋₇cycloalkyl; cyclohexyl mono-, di- or tri-substituted by methyl; ~~or~~ phenyl, unsubstituted or monosubstituted by chloro, bromo, nitro or C₁₋₄alkoxy or mono-, di- or tri-substituted by methyl; or beta-hydroxypropyl monosubstituted by gamma-C₁₋₄alkoxy, C₃₋₄alkenyloxy or phenoxy;

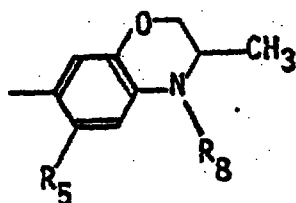
R₈ is hydrogen; C₁₋₁₀alkyl; C₂₋₁₀alkyl monosubstituted by chloro, bromo, -OH, cyano, -SCN, C₁₋₁₀alkylcarbonyl, C₁₋₁₀alkoxycarbonyl, formyloxy, C₁₋₁₀alkylcarbonyloxy, chloro- or bromo-C₁₋₄alkylcarbonyloxy, C₁₋₁₀alkoxycarbonyloxy, C₁₋₂alkoxyethoxy-carbonyloxy, C₃₋₄alkenyloxycarbonyl, chloro- or bromo-allyloxy-carbonyl, C₃₋₄alkenyloxy, chloro- or bromo-allyloxy, propynyloxy, benzoyloxy, C₁₋₁₀alkoxy, phenyl, phenoxy, phenylC₁₋₄alkoxy, aminocarbonyl, mono-C₁₋₄alkyl- or di(C₁₋₄alkyl)-aminocarbonyl, mono-C₁₋₄-alkyl- or di-(C₁₋₄alkyl)-aminocarbonyloxy, phenylaminocarbonyl, phenylaminocarbonyloxy, phthalimidyl-2, succinimidyl-2, saccharinyl-2, pyridyl or benzthiazolyl-2-mercapto or disubstituted by chloro, bromo, -OH, formyloxy, C₃₋₄alkynyloxy, C₁₋₄alkylcarbonyloxy, chloro or bromo C₁₋₄alkylcarbonyloxy, C₁₋₄alkoxycarbonyloxy, C₁₋₂alkoxyethoxycarbonyloxy or chloro or bromo allyloxycarbonyl; C₁₋₄-alkoxyC₂₋₄alkyl, in which the alkyl group of the alkoxy is monosubstituted by chloro, bromo, cyano, C₁₋₄alkoxy, C₁₋₄alkoxycarbonyl, C₁₋₄alkoxycarbonyloxy or C₁₋₄alkylcarbonyloxy; or C₃₋₄alkenyl unsubstituted or monosubstituted by phenyl, chloro or bromo; or

R₇ and R₈ together with the N-atom to which they are attached form unsubstituted piperidine or unsubstituted morpholine;

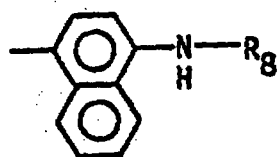
or K" is a group of formula b, c, d or e



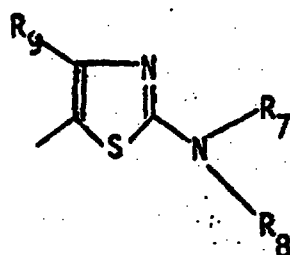
(b)



(c)



(d)



(e)

where R₉ is hydrogen, C₁₋₄alkyl or phenyl unsubstituted or mono- or di-substituted by methyl, methoxy or chloro, and R₅, R₇ and R₈ are as defined above.

5 Preferably R₅ is R₅^I where R₅^I is hydrogen, C₁₋₂alkyl or C₁₋₂-alkylcarbonylamino; more preferably R₅ is R₅^{II} where R₅^{II} is hydrogen, methyl or acetylamino.

Preferably R₆ is R₆^I where R₆^I is hydrogen or C₁₋₂alkoxy.

10 Preferably R₇ is R₇^I where R₇^I is C₁₋₆alkyl, C₁₋₄alkoxy-C₂₋₄alkyl, C₃₋₄alkenyloxyC₂₋₄alkyl, C₁₋₂alkylcarbonyloxyC₂₋₄alkyl, C₁₋₄alkoxy-carbonylC₂₋₄alkyl, allyl, C₁₋₂alkoxycarbonyloxyC₂₋₄alkyl or phenoxy-C₂₋₄alkyl; more preferably R₇ is R₇^{II} where R₇^{II} is C₂₋₄alkyl, C₁₋₂alkoxy-

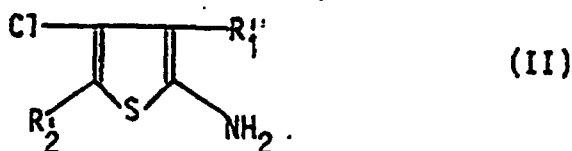
ethyl or allyl.

Preferably R_8 is R_8' where R_8' is hydrogen, C_{2-4} alkyl, C_{1-4} alkoxy C_{2-4} alkyl, C_{3-4} alkenyloxy C_{2-4} alkyl, allyl, hydroxy C_{2-4} alkyl, C_{1-2} alkoxycarbonyloxy C_{2-4} alkyl or C_{1-2} alkylcarbonyloxy C_{2-4} alkyl; more preferably R_8 is R_8'' where R_8'' is hydrogen, C_{2-4} alkyl, β -hydroxy- C_{2-4} alkyl or allyl.

Preferably K'' is a group of formula a) defined above.

Most preferably K is K''' where K''' is 2-methyl-4(N,N-di- C_{2-4} alkylamino)phenyl, 2-methyl-4(N-ethyl, N- γ -ethoxycarbonylpropylamino)phenyl; 2-methyl-4(N-ethyl, N- γ -phenoxypropylamino)phenyl; 2-acetylamino-4(N- β -ethoxycarbonyl ethylamino)-5-ethoxy phenyl; 2-acetylamino-4(N-ethyl-N-allyl amino)-5-ethoxy phenyl; 2-methyl-4(N-ethyl, N- β -hydroxybutyl amino)phenyl, 2-acetylamino-4(N,N-di- C_{2-3} alkylamino)phenyl or 2-acetylamino-4-(N,N-di- C_{2-4} alkylamino)-5- C_{1-2} alkoxy phenyl.

Preferred compounds of formula I are those of formula II or III

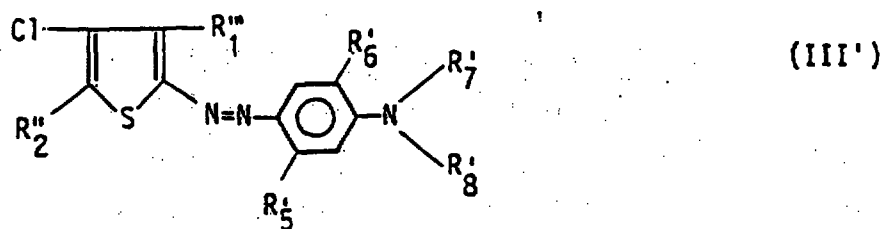


and

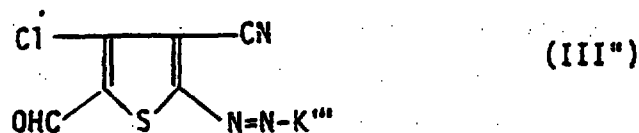


15 more preferably of formula III.

Preferred compounds of formula III are of formula III'



The more preferred compounds of formula III are of formula
III''



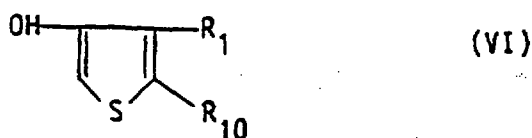
where K''' is defined above.

Compounds of formula I in which R₃ is -N=N-K can be prepared
5 by coupling to a diazotised compound of formula I where R₃ is -NH₂
a compound of formula V



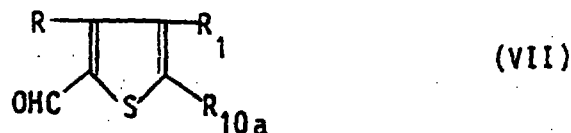
where the symbols are as defined above.

Compounds of formula I in which R₃ is -NH₂ can be prepared
by reacting a compound of formula VI



10 in which R₁ is defined above and R₁₀ is a primary amino group

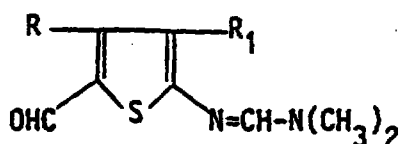
-NHCHO or -NHCOC₁₋₄alkyl, with a Vilsmeier reagent to form a compound of formula VII



where R_{10a} has a significance of R₁₀ or is -N=CH-N(CH₃)₂

5 followed by hydrolysis of R_{10a} to form -NH₂ and optional conversion of the formyl group to any of the other significances of R₂.

Preferably the Vilsmeier reagent is the reaction product of phosphoroxychloride and dimethylformamide in which case the compound of formula VII formed is of the formula



10 which is then hydrolysed in acid or basic medium to a compound of formula I in which R₂ is CHO and R₃ is -NH₂.

Compounds of formula V and VI are known or may be made by known methods from known compounds. Vilsmeier reagents are also known.

15 Conversion of the CHO group to another significance of R₂ in formula I can be carried out conventionally, for example by condensation with hydroxylamine and optional acylation on the oxygen alone whilst forming the nitrile group or reaction according to the Knoevenagel or Perkin reaction.

20 It is particularly preferred that the compounds of formula I contain no water-solubilising groups.

The compounds of formula I in which R_3 is $-N=N-K$ will hereinafter be referred to as the dyes of formula I. They are excellent disperse dyes.

5 The dyes of formula I can be worked up into dyeing preparations in known ways, for example by milling in the presence of dispersing agent or filling material. The preparation so produced, (which may be dried in vacuum or by spray-drying) can be used in a long or short dyebath for dyeing, padding or printing material.

10 The dyes of the invention exhaust onto synthetic or semi-synthetic hydrophobic high molecular weight textile material very well from an aqueous suspension. The dyes of the invention are particularly useful for dyeing, padding or printing textile material made from linear aromatic polyester, cellulose $2^{1/2}$
15 acetate, cellulose triacetate or synthetic polyamide.

Dyeing, printing or padding can be carried out by known methods, in particular according to the methods described in UK Patent 1,114,433.

20 The resulting dyeings have good fastness properties, in particular good light fastness, good thermofixation, good sublimation fastness and good fastness to pleating.

The invention will now be illustrated by the following Examples in which all parts and percentages are by weight and all temperatures are in °C.

25 Example 1

37.5 Parts of 2-amino-3-ethoxycarbonyl-4-oxo-4,5-dihydrothiophene (described in J. Org. Chem. 38 (20) 3615 [1973]) are dissolved in 152 parts of dimethylformamide, cooled to -10°C and to this solution 90 parts of phosphoroxchloride are added whilst

stirring well. This mixture is heated to 70° and then allowed to cool and is then poured onto 500 parts of ice water. The temperature of the mixture rises to 40°C. The mixture is stirred for 1/2 an hour and cooled to 5°C, filtered and the residue is washed with a little ice water. The resulting compound is 2-dimethyl-amino-methylimino-3-ethoxycarbonyl-4-chloro-5-formylthiophene having a melting point of 197°C. The product is suspended in 500 parts of water and 25 parts of 85 % phosphoric acid are added to the product together with 395 parts of ethyl alcohol and 60 parts of 30 % sodium hydroxide. Over two hours and whilst stirring the temperature of the suspension is raised to 65-70°C and the pH is maintained at 9 by addition of sodium carbonate. This is then diluted with 300 parts of ice water and the pH is brought to 6.5 by the slow addition of 30 % HCl (about 23 parts). 2-Amino-3-ethoxycarbonyl-4-chloro-5-formylthiophene precipitates out having a melting point of 176-178°. The product is filtered and is washed with a little ice-water. The pure product is recrystallised out of ethanol/water and has a melting point of 180°C.

By reacting the 5-formyl group with a methylene active compound, derivatives of this product can be produced by known methods.

Example 2

a) 122 Parts of 1,1-dicyano-2-methoxypropene together with 32 parts of sulphur powder are suspended in 300 parts of N,N-dimethylformamide, cooled to about 10° and to which 52 parts of triethylamine are added dropwise over 30 minutes whilst stirring. The temperature of the reaction mixture is allowed to rise to room temperature (25°) and the solution of 2-amino-3-cyano-4-methoxythiophene so formed is poured after stirring for 3 to 4 hours onto 500 g of ice and 150 parts of conc. hydrochloric acid. The product mixture that results is stirred 1 to 2 hours and is filtered; the product mixture is a mixture of 2-amino-3-cyano-thienin-4-one and 2-amino-3-cyano-ortho-4,5-dihydro-

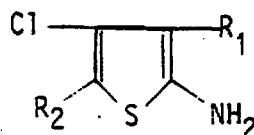
thiophen-4-one. This is washed with water and then dried.

- 5 b) 70 Parts of the product mixture prepared in a) above is dissolved in 400 parts of N,N-dimethylformamide and 230 g of phosphoroxychloride is added, dropwise over 15 minutes at 5°. Whilst stirring, the reaction temperature is allowed to rise and the mixture is heated to 70° and after 3 to 4 hours is then poured onto 1000 parts of ice. Finally, the mixture is neutralised to a pH of about 6, by adding about 450 parts of 10 25 % ammonia and the product 2-(N,N-dimethylformamidino)-3-cyano-4-chloro-5-formyl-thiophene, having a melting point of 183 to 188°, is filtered off. The product is recrystallised from acetonitrile and has a melting point of 191.5 to 193°C.
- 15 c) 24.15 Parts of 2-(N,N-dimethylformamidino)-3-cyano-4-chloro-5-formylthiophene are suspended in 100 parts of 50 % formic acid. 1 Part of ammonium sulphate is added and the mixture is boiled under reflux for about 5 hours. The mixture is allowed to cool and the product, 2-amino-3-cyano-4-chloro-5-formyl-20 thiophene, is filtered off. The amine, without further purifying, is diazotised (as described in Example 16) and coupled. The pure product is recrystallised from a mixture of ethanol and water, and has a melting point of 267 to 269°.

25 By condensation of the 5-formyl group by known methods (i.e. Knoevenagel reaction; oxime formation and dehydration) derivatives of this compound can be made. Formation of derivatives can be done when the azo compound has already been formed (as described in Example 17).

Examples 3 to 15

Compounds of the formula



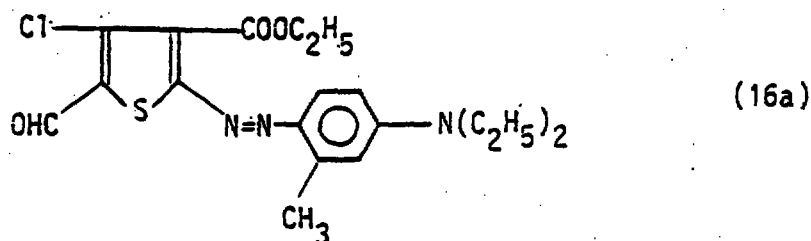
in which R₁ and R₂ are defined in Table 1 below, can be formed analogously to the method of Example 1 or 2 from suitable reactants.

TABLE 1

EX. No.	R ₂	R ₁
3	-CHO	-COOCH ₃
4	do.	-COOC ₄ H ₉
5	do.	-COOCH ₂ CH ₂ OCH ₃
6	do.	-COOCH ₂ C ₆ H ₅
7	do.	-SO ₂ C ₆ H ₅
8	$\begin{array}{c} \text{CN} \\ \diagup \\ -\text{CH}=\text{C} \\ \diagdown \\ \text{COOC}_4\text{H}_9 \end{array}$	-CN
9	$\begin{array}{c} \text{CN} \\ \diagup \\ -\text{CH}=\text{C} \\ \diagdown \\ \text{COOC}_2\text{H}_5 \end{array}$	do.
10	-CHO	-CONH-n-C ₄ H ₉
11	-CN	-CN
12	do.	-COOC ₂ H ₅
13	$\begin{array}{c} \text{H} \\ \diagup \\ -\text{CH}=\text{C} \\ \diagdown \\ \text{NO}_2 \end{array}$	-CN
14	$\begin{array}{c} \text{CN} \\ \diagup \\ -\text{CH}=\text{C} \\ \diagdown \\ \text{COOCH}_2\text{CH}_2\text{OCH}_3 \end{array}$	do.
15	$\begin{array}{c} \text{CN} \\ \diagup \\ -\text{CH}=\text{C} \\ \diagdown \\ \text{COOCH}_2\text{C}(\text{CH}_3)=\text{CH}_2 \end{array}$	do.

Example 16

23.5 Parts of 2-amino-3-ethoxycarbonyl-4-chloro-5-formyl-thiophene are dissolved in a mixture of 400 parts acetic acid, 100 parts of propionic acid and 85 parts of phosphoric acid at 30°, then cooled to -5° and at this temperature reacted with 7.0 parts of sodium nitrite (in the form of a 4 N solution) at this temperature. A brown solution results. This is stirred for about 2 hours. To this diazonium salt solution a mixture of 18 parts of N,N-diethylaminometatoluidine, 6 parts of aminosulphonic acid, 10 parts of glacial acetic acid and 50 parts of water is very slowly added whilst stirring and the pH of the mixture is kept at 3.5 to 4 by the addition of 30 % NaOH solution. The resulting blue-grey dyestuff suspension is then stirred for a further 2 hours, filtered and the residue is washed with 100 parts of 10 % acetic acid followed by 100 parts of water and dried under vacuum at 50°C. The resulting dyestuff is a compound of formula 16a

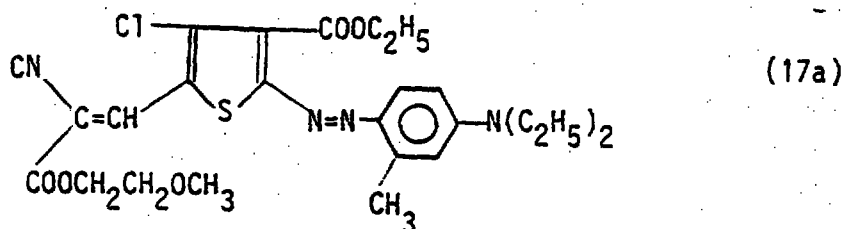


and dyes polyester material a blue-violet tone.

Example 17

21.3 Parts of the product of formula 16a are dissolved in 150 parts of dioxane at room temperature and are then reacted with 28 parts of cyanoacetic acid-methoxyethyl ester followed by a mixture of 2 parts piperidine and 2 parts of glacial acetic acid. After stirring for 20 hours at 25-30°, no starting material can be detected by thin layer chromatography.

After diluting with water, the product precipitates out and is filtered off, washed with 100 parts of water and vacuum dried at 50°. Using a column silica gel chromatograph, a purified compound of the formula 17a

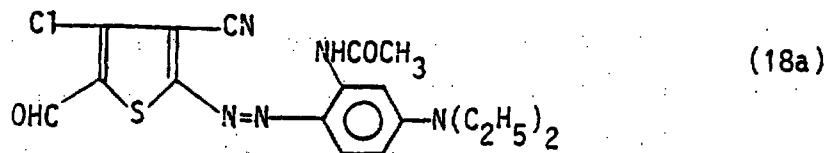


5 results, which has a melting point of 135-136°.

Example 18

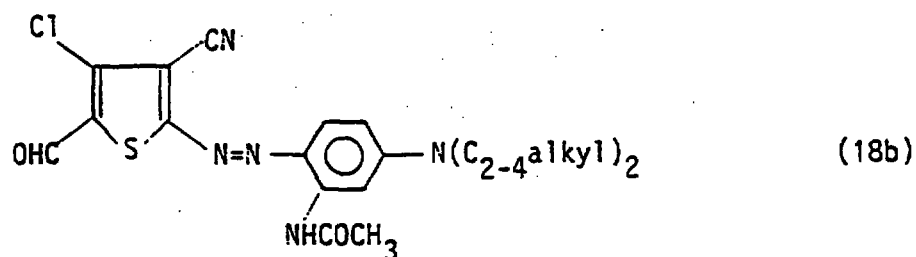
a) 18.6 Parts of 2-amino-3-cyano-4-chloro-5-formyl thiophene are dissolved in 200 parts of 85 % phosphoric acid. Whilst stirring, 33 parts of 40 % nitrosylsulphuric acid are added dropwise and the mixture is stirred for 3 hours at about 0°.

The resulting brown diazonium salt solution is added part by part whilst stirring well to a solution of 20.6 parts of 3-(N,N-diethylamino)-1-acetanilide and 2 parts of aminosulphonic acid in 30 parts of 5 % sulphuric acid. The coupling temperature of 0-3° is achieved by external cooling and the addition of about 200 parts of ice. The resulting dyestuff is stirred for 1-2 hours, filtered, washed with about 300 parts of water and dried under vacuum. The resulting product is a compound of formula 18a



which dyes polyester blue tones and has good fastness properties.

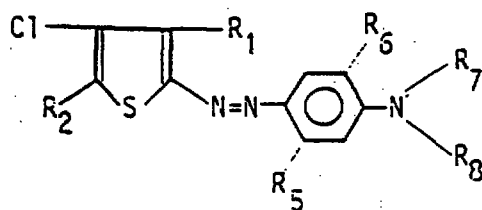
- b) Instead of using 3-(N,N-diethylamino)-1-acetanilide as the coupling component in the method of Example 18 a) above, a mixture of 3-(N,N-di-C₂₋₄alkylamino)-1-acetanilide (prepared by mixed alkylation of 3-amino-1-acetanilide) is used. A dyestuff mixture of the formula 18 b)



results. The alkyl groups are in the ratio of 1:1 C₂ to C₃ or 1:1 C₂ to C₄

Examples 19 to 137

Compounds of the formula



in which the symbols are defined in Table 2 below, can be prepared by a method analogous to Examples 16, 17 and 18 from suitable reactants.

TABLE 2

No.	R ₁	R ₂	R ₅	R ₆	R ₇	R ₈	Shade on polyester fibre material
19	-COOC ₂ H ₅	CHO	-NHCOC ₂ H ₅	H	-C ₂ H ₅	-C ₂ H ₅	violet
20	do.	do.	-CH ₃	H	do.	do.	do.
21	do.	do.	-NHCOCCH ₂ CH ₂ OC ₂ H ₅	H	do.	do.	do.
22	do.	do.	-NHCOCCH ₃	H	do.	do.	do.
23	do.	do.	do.	H	-C ₃ H ₇	-CH ₂ CH ₂ CH ₃	do
24	do.	do.	-CH ₃	-OCH ₃	-CH ₂ CH ₂ CH ₂ CH ₃	-CH ₂ CH ₂ OH	reddish-blue
25	do.	do.	-NHCOCCH ₂ CH ₂ OCCH ₃	H	-C ₂ H ₅	-C ₂ H ₅	do.
26	do.	do.	-NHCOCCH ₃	-OCH ₃	-CH ₂ CH ₂ OCOCCH ₃	-CH ₂ CH ₂ OCOCCH ₃	navy-blue
27	do.	do.	do.	-OC ₂ H ₅	do.	do.	do.
28	do.	do.	do.	-OCH ₂ CH ₂ OCCH ₃	do.	do.	do.
29	do.	do.	do.	-OCH ₃	H	-CH ₂ CH ₂ COOCH ₂ CH ₂ OCCH ₃	do.
30	do.	do.	do.	H	-C ₂ H ₅	-C ₂ H ₅	blau
31	do.	do.	-NHCOC ₂ H ₅	H	do.	do.	do.
32	do.	do.	-NHCOCCH ₂ CH ₂ OC ₂ H ₅	H	do.	do.	reddish-blue
33	do.	do.	H	H	do.	-CH ₂ CH ₂ OC ₆ H ₅	do.
34	do.	-CH=CHNO ₂	-CH ₃	H	do.	-C ₂ H ₅	blue

Table No. 2 continued

EX. No.	R ₁	R ₂	R ₅	R ₆	R ₇	R ₈	Shade on polyester fibre material
35	-COOC ₂ H ₅	NC $\begin{array}{l} \diagup \\ \text{C} = \text{CH} - \\ \diagdown \end{array}$ COOCH ₂ CH ₂ CH ₂ CH ₃	-CH ₃	H	n-C ₄ H ₉	-CH ₂ CH ₂ OH	blue
36	do.	NC $\begin{array}{l} \diagup \\ \text{C} = \text{CH} - \\ \diagdown \end{array}$ COOCH ₂ CH ₂ OCH ₃	-NHCOC ₂ H ₅	H	-C ₂ H ₅	-C ₂ H ₅	greenish-blue
37	do.	do.	H	H	do.	do.	blue
38	do.	NC $\begin{array}{l} \diagup \\ \text{C} = \text{CH} - \\ \diagdown \end{array}$ COOCH ₂ CH ₂ OCH ₂ CH ₂ CH ₃	-CH ₃	H	do.	do.	greenish-blue
39	do.	do.	-NHCOC ₂ H ₅	H	do.	do.	do.
40	-COOCH ₃	-CHO	-CH ₃	H	do.	do.	blueish-violet
41	do.	do.	-NHCOC ₂ H ₅	H	do.	do.	do.
42	do.	O ₂ NHC=CH-	do.	H	do.	do.	blue
43	-COOCH ₂ CH ₂ OCH ₃	NC $\begin{array}{l} \diagup \\ \text{C} = \text{CH} - \\ \diagdown \end{array}$ COOCH ₂ CH ₂ CH ₂ CH ₃	do.	H	do.	do.	greenish-blue

Table No. 2 continued

EX. No.	R ₁	R ₂	R ₅	R ₆	R ₇	R ₈	Shade on polyester fibre material
44	-CN	-CHO	-CH ₃	H	-C ₂ H ₅	-C ₂ H ₅	blue
45	do.	do.	do.	H	n-C ₃ H ₇	n-C ₃ H ₇	do.
46	do.	do.	do.	H	-C ₂ H ₅	n-C ₄ H ₉	do.
47	do.	do.	H	H	do.	n-C ₆ H ₁₃	do.
48	do.	do.	-NHCOOC ₂ H ₄ OC ₂ H ₅	H	do.	-C ₂ H ₅	do.
49	do.	do.	-NHCOCH ₃	H	do.	-C ₃ H ₇	do.
50	do.	do.	do.	H	n-C ₃ H ₇	n-C ₃ H ₇	do.
51	do.	do.	-NHCOC ₂ H ₅	H	do.	do.	do.
52	do.	do.	do.	H	-C ₂ H ₅	-C ₂ H ₅	do.
53	do.	do.	-NHCOCH ₂ CH ₂ Cl	H	do.	do.	do.
54	do.	-CHO	-NHCOOC ₂ H ₄ OCH ₃	H	do.	do.	do.
55	do.	do.	-NHCOC ₂ H ₄ COOC ₂ H ₅	H	do.	do.	do.
56	do.	do.	-NHCOCH ₂ COOCH ₃	H	do.	do.	do.
57	do.	do.	-NHCOCH = CH ₂	H	do.	do.	do.
58	do.	do.	-NHCOCH ₃	-OCH ₃	do.	do.	greenish-blue
59	do.	do.	do.	do.	-CH ₂ -CH=CH ₂	-CH ₂ -CH=CH ₂	do.
60	do.	do.	do.	-OC ₂ H ₅	-C ₂ H ₅	-C ₂ H ₅	do.
61	do.	do.	do.	do.	-CH ₂ CH ₂ OCOCH ₃	-CH ₂ CH ₂ OCOCH ₃	do.
62	do.	-CN	-CH ₃	H	-C ₂ H ₅	-C ₂ H ₅	blau

Table No. 2 continued

EX. No.	R ₁	R ₂	R ₅	R ₆	R ₇	R ₈	Shade on polyester fibre material
63	-CN	-CN	-CH ₃	H	n-C ₃ H ₇	n-C ₃ H ₇	blue
64	do.	do.	do.	H	n-C ₄ H ₉	n-C ₄ H ₉	do.
65	do.	do.	do.	H	-C ₂ H ₅	do.	do.
66	do.	do.	do.	H	do.	-C ₃ H ₆ O-C ₆ H ₅	do.
67	do.	-CHO	do.	H	do.	do.	do.
68	do.	do.	do.	-OCH ₃	-C ₂ H ₄ COO(CH ₂) ₃ CH ₃	H	do.
69	do.	-CN	-NHCOCH ₃	do.	-C ₂ H ₄ COOC ₂ H ₅	H	greenish-blue
70	do.	do.	do.	H	-C ₂ H ₅	-C ₂ H ₅	blau
71	do.	do.	-NHCOC ₂ H ₅	H	n-C ₃ H ₇	n-C ₃ H ₇	do.
72	do.	do.	-NHCOCH ₃	-OC ₂ H ₅	-C ₂ H ₄ COOCH ₃	H	do.
73	do.	do.	-NHCOC ₂ H ₅	-OCH ₃	-CH(CH ₃)C ₂ H ₅	H	do.
74	do.	do.	-NHCOCH ₃	do.	-C ₂ H ₅	do.	do.
75	do.	do.	-NHCOCH ₃	do.	-CH ₂ -CH=CH ₂	-C ₂ H ₅	greenish-blue
76	do.	do.	do.	-OC ₂ H ₅	-CH ₂ -CH=CH ₂	-CH ₂ -CH=CH ₂	do.
77	do.	do.	do.	do.	-C ₂ H ₅	-C ₂ H ₅	do.
78	do.	-CHO	-OCH ₃	do.	-CH ₂ CH ₂ OCOCH ₃	-CH ₂ CH ₂ OCOCH ₃	do.
79	do.	do.	-OC ₂ H ₅	do.	-C ₂ H ₅	-CH ₂ -CH=CHCl	do.
80	do.	do.	do.	do.	-C ₂ H ₅	-CH ₂ -CH=CH ₂	do.
81	do.	do.	do.	do.	-CH ₂ CH ₂ OCOCH ₃	H	do.
82	do.	do.	do.	do.	-CH ₂ CH ₂ COOCH ₂ COOC ₂ H ₅	H	do.
83	do.	do.	do.	do.	-CH ₂ CH ₂ COOCH ₂ CH=CHCl	H	do.
				do.	-CH ₂ CH ₂ OCH ₃	-CH ₂ CH ₂ OCH ₃	do.

Table No. 2 continued

Ex. No.	R ₁	R ₂	R ₅	R ₆	R ₇	R ₈	Shade on polyester fibre material
94	-CN	-CHO	-NHCOCH ₃	-OCH ₃	-C ₂ H ₄ CN	-C ₂ H ₅	greenish-blue
95	do.	do.	do.	do.	-C ₂ H ₄ OCH ₂ CH=CH ₂	-C ₂ H ₄ OCH ₂ CH=CH ₂	do.
96	do.	do.	do.	do.	n-C ₄ H ₉	n-C ₄ H ₉	do.
97	do.	do.	do.	-OC ₂ H ₅	do.	-C ₂ H ₅	do.
98	do.	do.	do.	do.	n-C ₃ H ₇	n-C ₃ H ₇	do.
99	do.	do.	do.	-OC ₂ H ₄ OCH ₃	-C ₂ H ₄ OCH ₃	-C ₂ H ₄ OCH ₃	do.
100	do.	do.	do.	do.	-C ₂ H ₄ COOCH ₃	-H	do.
101	do.	do.	-NHCOC ₂ H ₄ OCH ₃	-OC ₂ H ₅	-C ₂ H ₅	-C ₂ H ₅	do.
102	do.	do.	-NHCOCH ₃	do.	-C ₂ H ₄ OCH ₃	-C ₂ H ₄ OCOCH ₃	do.
103	do.	do.	-NHCOOCH ₃	do.	-C ₂ H ₅	-C ₂ H ₅	do.
104	do.	do.	-NHCOC ₂ H ₄ OC ₂ H ₅	do.	-C ₂ H ₅	-C ₂ H ₅	do.
105	do.	do.	-NHCOCH ₃	do.	-C ₂ H ₄ COOC ₂ H ₅	-H	do.
106	do.	do.	-NHCOCH ₃	do.	-C ₂ H ₄ COOCH ₂ CH=CH ₂	-H	do.
107	do.	do.	do.	-OCH ₃	-C ₂ H ₄ COOCH ₂ -C(CH ₃)=CH ₂	-H	do.
108	do.	do.	do.	do.	-C ₂ H ₄ COOCH ₂ COOCH ₃	-H	do.
109	do.	-CN	do.	do.	do.	-H	do.

Table No. 2 continued

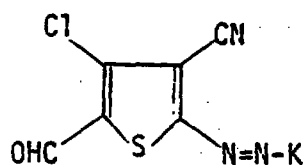
Ex. No.	R ₁	R ₂	R ₅	R ₆	R ₇	R ₈	Shade on polyester fibre material
110	-CN	-CHO	-NHCOCH ₃	-OCH ₃	-C ₂ H ₅	n-C ₄ H ₉	greenish-blue
111	do.	-CN	do.	do.	do.	do.	do.
112	do.	-CHO	do.	-H	-C ₂ H ₄ OCH ₃	-C ₂ H ₅	blue
113	do.	do.	do.	-H	do.	-C ₂ H ₄ OCH ₃	do.
114	do.	do.	do.	-H	-(CH ₂) ₃ -O-C ₆ H ₅	-C ₂ H ₅	do.
115	do.	do.	do.	-H	-(CH ₂) ₃ COOC ₂ H ₅	do.	do.
116	do.	do.	do.	-H	-(CH ₂) ₄ OCOCH ₃	do.	do.
117	do.	do.	do.	-H	do.	-(CH ₂) ₄ OCOCH ₃	do.
118	do.	do.	-H	-H	-C ₂ H ₄ OC ₆ H ₅	-C ₂ H ₅	do.
119	do.	do.	-CH ₃	-H	-C ₂ H ₄ OCH ₂ -C ₆ H ₅	do.	do.
120	do.	do.	do.	-H	-(CH ₂) ₃ COOC ₂ H ₅	do.	do.
121	do.	do.	do.	-H	-(CH ₂) ₃ OC ₆ H ₄ -4-CH ₃	do.	do.
122	do.	do.	do.	-H	-CH ₂ CHOHC ₂ H ₅	do.	do.
123	do.	do.	do.	-H	-CH ₂ CHOHC ₂ H ₂ Cl	do.	do.
124	do.	do.	do.	-H	-CH ₂ CHOHC ₂ OCOCH ₃	do.	do.

Table No. 2 continued

Ex. No.	R ₁	R ₂	R ₅	R ₆	R ₇	R ₈	Shade on polyester fibre material
125	-CN	-CHO	-CH ₃	-OCH ₃	-C ₂ H ₄ OCOCH ₃	-C ₂ H ₄ OCOCH ₃	blue
126	do.	do.	do.	do.	-CH ₂ CHOHCH ₂ OC ₆ H ₅	-CH ₃	do.
127	do.	do.	do.	do.	-C ₂ H ₄ COOCH ₂ CH=CHC1	-H	do.
128	do.	do.	do.	do.	-C ₂ H ₄ COOCH ₂ C ₆ H ₅	-H	do.
129	do.	do.	do.	do.	-(CH ₂) ₃ OC ₆ H ₅	-H	do.
130	do.	do.	-OCH ₃	do.	-CH ₂ -CH=CH ₂	-CH ₂ -CH=CH ₂	do.
131	do.	do.	do.	do.	do.	-C ₂ H ₅	do.

Examples 132 to 141

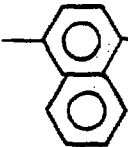
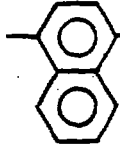
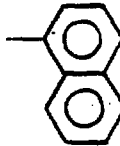
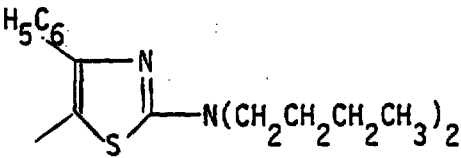
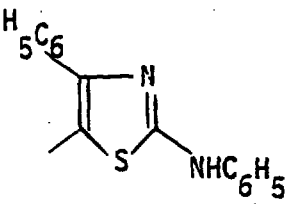
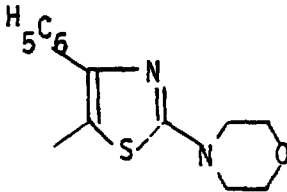
Compounds of the formula



in which K is defined in Table 3 below can be prepared by a method analogous to that of Example 18 from suitable reactants.

TABLE 3

Ex. No.	K	Shade
132		greenish-blue
133		greenish-blue
134		greenish-blue
135		greenish-blue

Ex. No.	K	Shade
136	 $\text{NH-CH}_2\text{CHOHCH}_2\text{OH}$	greenish-blue
137	 $\text{NHCH}_2\text{CHOHCH}_2\text{OCH}_2\text{C}\equiv\text{CH}$	greenish-blue
138	 $\text{NHC}_2\text{H}_4\text{COOC}_2\text{H}_5$	greenish-blue
139	 $\text{N}(\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_3)_2$	blue
140	 NHC_6H_5	blue
141		blue

Application Example

7 Parts of the compound of formula 17a (as defined in Example 17) are milled with 4 parts of the sodium salt of dinaphthylmethane-disulphonic acid, 4 parts of sodium cetyl sulphate and 5 parts of water-free sodium sulphate in a sand mill.

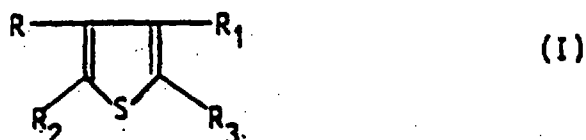
1 Part of the resulting dyestuff preparation is wetted with a little water and the resulting suspension is sieved with a sieve having holes of a diameter of 10 μ . This sieved suspension together with 3 parts of sodium laurylsulphate is added to 4000 parts of water to form a dyeing bath.

100 Parts of cleaned polyester fibre material is added at 40-50° in a goods to liquor ratio of 1:40 to the bath. 20 Parts of a chlorinated benzene emulsified in water are then added and the bath is warmed to 100° and dyed for 1-2 hours at 95-100°. The blue dyed fibres are washed, soaped, re-washed and dried. The level dyeing has good fastness properties.

Instead of the compound of formula 17a any of the products of Example 1 to 16 and 18 to 141 in appropriate quantity may be used.

CLAIMS: -

1. A compound of formula I



in which R is halogen,

R₁ is cyano, C₁₋₆alkoxycarbonyl, C₃₋₆alkenyloxy-carbonyl, aminocarbonyl, C₁₋₄alkylsulphonyl, phenylsulphonyl, C₁₋₄-alkyl- or phenyl-carbonyl; phenyl-, mono-C₁₋₄alkyl- or di-C₁₋₄-alkyl-aminocarbonyl; or benzyloxycarbonyl;

R₂ is formyl, cyano, -CH=C(R₄)₂; ^{or} -CH=N-OH;

R₃ is -N=N-K or -NH₂;

K is a coupling component radical;

each R₄ independently, is cyano, C₁₋₆alkoxycarbonyl,

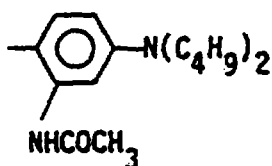
C₃₋₆alkenyloxycarbonyl or C₃₋₆alkynyloxycarbonyl or one R₄ is cyano and the other R₄ is benzoyl unsubstituted or mono-substituted by C₁₋₄alkoxycarbonyl; C₁₋₄alkylsulphonyl; phenylsulphonyl; or amino-

carbonyl unsubstituted or mono-substituted by C₁₋₄alkyl or phenyl; or one R₄ is hydrogen and the other R₄ is benzoyl unsubstituted or mono-substituted by C₁₋₂alkoxycarbonyl, halogen, C₁₋₄alkyl or -NO₂; or C₁₋₄alkylcarbonyl or C₃₋₆alkenylcarbonyl; or one R₄ is nitro and the other R₄ is hydrogen, methyl or ethyl;

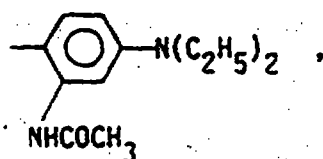
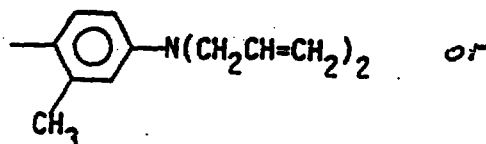
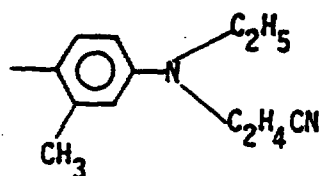
with the provisos that

i) when R₁ is methylsulphonyl, R₂ is formyl ^{and} R is chloro, then R₃ is -N=N-K where K is not



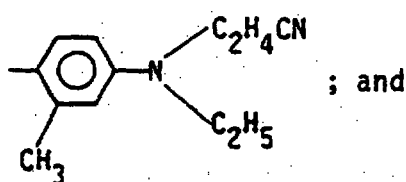


ii) when R_1 is methylsulphonyl, R_2 is $-\text{CH}=\text{C}$ $\begin{matrix} \text{CN} \\ \text{COOC}_2\text{H}_5 \end{matrix}$ or formyl
 R_3 is $-\text{N}=\text{N}-\text{K}$ where
 and R is chloro, then K is not



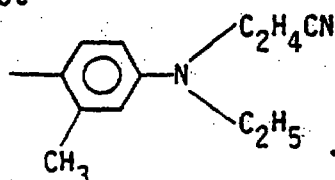
iii) when R_1 is methylsulphonyl, R_2 is $-\text{CH}=\text{C}$ $\begin{matrix} \text{COOC}_2\text{H}_5 \\ \text{CN} \end{matrix}$ and

5 R is Br, then K is not



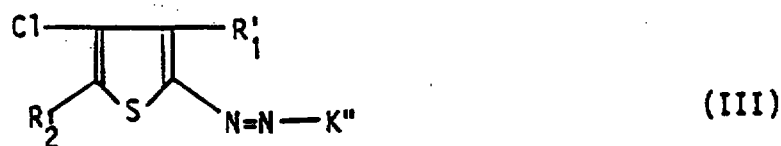
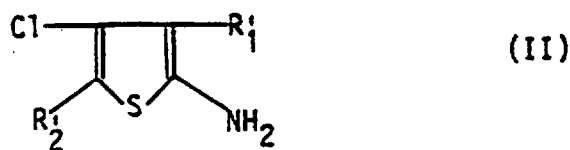
iv) when R_1 is methylsulphonyl, R_2 is formyl and R is bromo, then

R_3 is $-\text{N}=\text{N}-\text{K}$ where K is not



2. A compound according to Claim 1 of formula II or formula III

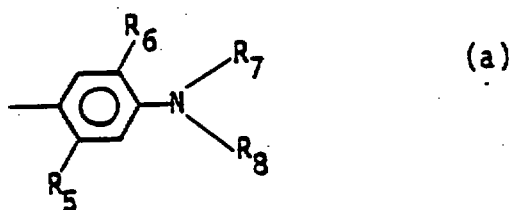




in which R_1 is cyano, C_{1-4} alkoxycarbonyl, C_{3-4} alkenyloxy-carbonyl, C_{1-4} alkoxy C_{2-4} alkoxycarbonyl, benzyloxycarbonyl, C_{1-4} -alkylsulphonyl or phenylsulphonyl;

R_2 is formyl, cyano, $-\text{CH}=\text{C}(\text{R}_4)_2$ where each R_4 independently, is cyano, C_{1-6} alkoxycarbonyl, C_{3-6} alkenyloxy-carbonyl or C_{1-4} alkoxy-ethoxycarbonyl or one R_4 is nitro and the other R_4 is hydrogen; and

K'' is a group of formula a)



in which R_5 is hydrogen, C_{1-2} alkyl, C_{1-2} alkoxy, formylamino, C_{1-4} alkylcarbonylamino in which the alkyl group is unsubstituted or mono-substituted by $-\text{OH}$, Cl , Br , C_{1-4} alkoxy, phenyl, phenoxy, benzyloxy or C_{1-2} alkoxycarbonyl; benzoylamino, acryloylamino, amino-carbonylamino, C_{1-4} alkylaminocarbonylamino, C_{1-4} alkoxycarbonylamino in which the alkoxy group is unsubstituted or mono-substituted by C_{1-2} alkoxy or phenyl; C_{1-2} alkyl- or phenyl-sulphonylamino; di- $(\text{C}_{1-2}$ alkyl)aminosulphonylamino; fluoro, chloro or bromo;



R_6 is hydrogen, fluoro, chloro, bromo, C_{1-2} alkyl, C_{1-4} alkoxy or C_{1-2} alkoxyethoxy provided that when R_5 is fluoro, chloro or bromo, R_6 is other than fluoro, chloro or bromo;

R_7 is hydrogen, unsubstituted C_{1-10} alkyl; C_{2-10} alkyl mono-
 5 substituted by chloro, bromo, hydroxyl, cyclohexyl, -SCN, cyano, C_{1-4} alkylcarbonyl, C_{1-4} alkoxycarbonyl, formyloxy, C_{1-10} alkylcarbonyloxy, chloro- or bromo- C_{1-3} alkylcarbonyloxy, C_{1-10} alkoxycarbonyloxy, C_{1-2} alkoxyethoxycarbonyl, C_{3-4} alkenyloxycarbonyl, chloro- or bromo-allyloxycarbonyl, C_{3-4} alkenyloxy, chloro- or bromo-
 10 allyloxy, propynyloxy, benzyloxy, benzoyloxycarbonyl, C_{1-10} alkoxy, phenyl, phenoxy or phenyl- C_{1-4} alkoxy; or di-substituted by chloro, bromo, hydroxy, formyloxy, chloro- or bromo- C_{1-3} alkylcarbonyloxy, C_{1-4} alkoxycarbonyloxy, C_{1-4} alkylcarbonyloxy, C_{1-2} alkoxyethoxycarbonyloxy, or chloro- or bromo-allyloxycarbonyl; C_{3-4} alkynyloxy;
 15 C_{1-4} alkoxy- C_{2-6} alkyl in which the alkyl group of the alkoxy is monosubstituted by chloro, bromo, cyano, C_{1-4} alkoxy, C_{1-4} alkoxycarbonyl, C_{1-4} alkoxycarbonyloxy or C_{1-4} alkylcarbonyloxy; β -(C_{1-4} alkoxycarbonylmethoxycarbonyl) ethyl; C_{3-4} alkenyl unsubstituted or monosubstituted by phenyl, chloro or bromo; propynyl; C_{5-7} cycloalkyl;
 20 cyclohexyl mono-, di- or tri-substituted by methyl; ~~or~~ beta-hydroxypropyl mono-substituted by gamma- C_{1-4} alkoxy, C_{3-4} alkenyloxy or phenoxy; or phenyl, unsubstituted or mono-substituted by chloro, bromo, nitro or C_{1-4} alkoxy or mono-, di- or tri-substituted by methyl;

R_8 is hydrogen; C_{1-10} alkyl; C_{2-10} alkyl monosubstituted by chloro, bromo, -OH, cyano, -SCN, C_{1-10} alkylcarbonyl, C_{1-10} alkoxycarbonyl, formyloxy, C_{1-10} alkylcarbonyloxy, chloro- or bromo-
 25 C_{1-4} alkylcarbonyloxy, C_{1-10} alkoxycarbonyloxy, C_{1-2} alkoxyethoxycarbonyloxy, C_{3-4} alkenyloxycarbonyl, chloro- or bromo-allyloxycarbonyl, C_{3-4} alkenyloxy, chloro- or bromo-allyloxy, propynyloxy, benzoyloxy, C_{1-10} alkoxy, phenyl, phenoxy, phenyl- C_{1-4} alkoxy, amino-
 30 carbonyl, mono- C_{1-4} alkyl- or di(C_{1-4} alkyl)aminocarbonyl, mono- C_{1-4} alkyl- or di-(C_{1-4} alkyl)aminocarbonyloxy, phenylaminocarbonyl, phenylaminocarbonyloxy, phthalimidyl-2, succinimidyl-2, saccharinyl-2, pyridyl or benzthiazolyl-2-mercapto or disubstituted by chloro,

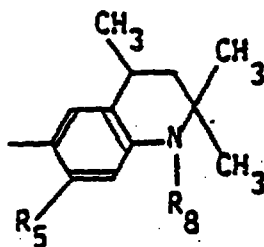


- bromo, OH, formyloxy, C₃₋₄alkynyloxy, C₁₋₄alkylcarbonyloxy, chloro or bromoC₁₋₄-alkylcarbonyloxy, C₁₋₄alkoxycarbonyloxy, C₁₋₂alkoxyethoxycarbonyloxy or chloro or bromo allyloxycarbonyl; C₁₋₄alkoxyC₂₋₄alkyl, in which the alkyl group of the alkoxy is mono-substituted by chloro, bromo, cyano, C₁₋₄alkoxy, C₁₋₄alkoxycarbonyl, C₁₋₄alkoxycarbonyloxy or C₁₋₄alkylcarbonyloxy; or C₃₋₄alkenyl unsubstituted or monosubstituted by phenyl, chloro or bromo; or
- 5

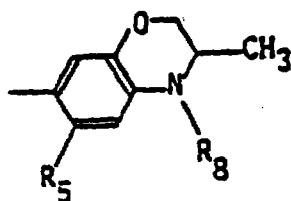
R₇ and R₈ together with the N-atom to which they are attached form unsubstituted piperidine or unsubstituted morpholine;

10

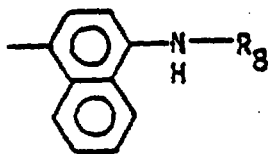
or K^u is a group of formula b, c, d or e



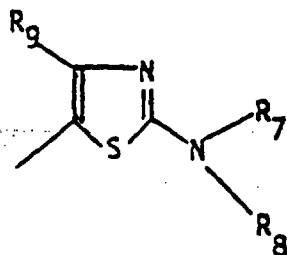
(b)



(c)



(d)

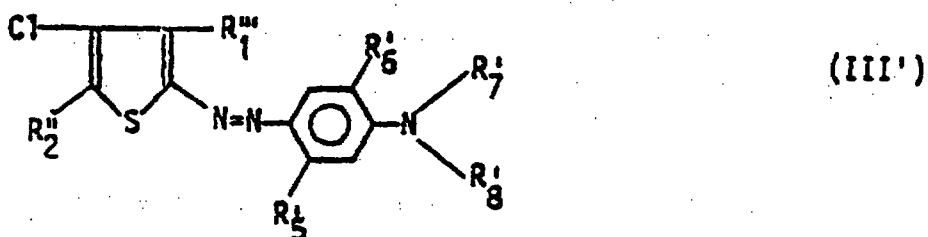


(e)



where R_9 is hydrogen, C_{1-4} alkyl or phenyl unsubstituted or mono- or di-substituted by methyl, methoxy or chloro, and R_5 , R_7 and R_8 are as defined above.

3. A compound according to Claim 2 of formula III'



in which R_1'' is cyano or C_{1-2} alkoxycarbonyl;

R_2'' is formyl or cyano;

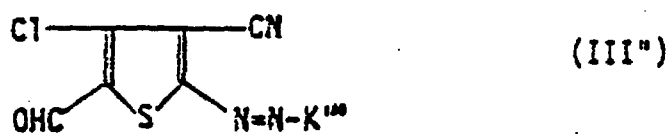
R_5 is hydrogen, C_{1-2} alkyl or C_{1-2} alkylcarbonylamino;

R_6 is hydrogen or C_{1-2} alkoxy;

R_7 is C_{1-6} alkyl, C_{1-4} alkoxy- C_{2-4} alkyl, C_{3-4} alkenyloxy- C_{2-4} alkyl, C_{1-2} alkylcarbonyloxy- C_{2-4} alkyl, C_{1-4} alkoxycarbonyl- C_{2-4} alkyl, allyl, C_{1-2} alkoxycarbonyloxy- C_{2-4} alkyl or phenoxy- C_{2-4} alkyl;

R_8 is hydrogen, C_{2-4} alkyl, C_{1-4} alkoxy- C_{2-4} alkyl, C_{3-4} alkenyloxy- C_{2-4} alkyl, allyl, hydroxy- C_{2-4} alkyl, C_{1-2} alkoxycarbonyloxy- C_{2-4} alkyl or C_{1-2} alkylcarbonyloxy- C_{2-4} alkyl.

4. A compound according to Claim 3 of formula III''



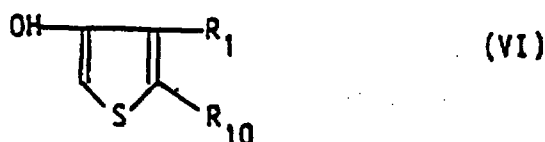
15

in which K'' is 2-methyl-4(N,N-di- C_{2-4}



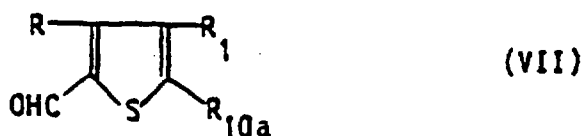
alkylamino)phenyl, 2-methyl-4(N-ethyl, N- γ -ethoxycarbonylpropylamino)phenyl; 2-methyl-4(N-ethyl, N- γ -phenoxypropylamino)phenyl; 2-acetylamino-4(N- β -ethoxycarbonyl-ethylamino)-5-ethoxy phenyl; 2-acetylamino-4(N-ethyl-N-allyl amino)-5-ethoxy phenyl; 2-methyl-4(N-ethyl, N- β -hydroxybutyl amino)phenyl, 2-acetylamino-4(N,N-diC₂₋₃alkylamino)phenyl or 2-acetylamino-4(N,N-di-C₂₋₄-alkylamino) 5-C₁₋₂alkoxy phenyl.

5. A process for preparing a compound of formula I defined in Claim 1 in which R₃ is -NH₂ comprising reacting a compound of formula VI



in which R₁ is defined in Claim 1, and

R₁₀ is a primary amino group, -NHCHO or -NHCOC₁₋₄alkyl with a Vilsmeier reagent to form a compound of formula VII



where R_{10a} is a significance of R_{10a} or is -N=CH-N(CH₃)₂;

followed by hydrolysis of R_{10a} to form -NH₂ and optional conversion of the formyl group to any of the other significances of R₂.

6. A process for preparing a compound of formula I defined in Claim 1, in which R₃ is -N=N-K comprising coupling to the diazotised compound of formula I where R₃ is -NH₂, a compound of formula V



H—K

in which K is defined in Claim 1.

7. A process for dyeing a substrate comprising applying to that substrate a compound of formula I defined in Claim 1 in which R_3 is $-N=N-K$.

5 8. A process for dyeing a substrate comprising applying to the substrate a compound according to any one of Claims 2 to 4.

9. A substrate when dyed with a compound of formula I defined in Claim 1 in which R_3 is $-N=N-K$.

10 10. A substrate when dyed with a compound according to any one of Claims 2 to 4.

11. A compound of formula I defined in Claim 1 substantially as herein described with reference to any one of Examples 1 to 141.

12. A process according to Claim 8 substantially as herein described with reference to the Application Example.

15 13. A substrate according to Claim 10, substantially as herein described with reference to the Application Example.

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