C09B

ORGANIC DYES OR CLOSELY-RELATED COMPOUNDS FOR PRODUCING DYES {, e.g. PIGMENTS}; MORDANTS; LAKES (fermentation or enzyme using processes to synthesise a desired chemical compound C12P)

Definition statement

This place covers:

- Dyes (coloured compounds being at least partially soluble in a liquid medium; thereby the chemical structure of the chromophore might be relevant for the sub-group given for a certain dye class [e.g. anthracene dyes (C09B 1/00), monoazo dyes (C09B 29/00), quinacridones (C09B 48/00)] etc.)] or functional groups attached to the chromophor might be relevant [e.g. reactive dyes (C09B 62/00), Dyes containing a splittable water solubilizing group (C09B 69/08)]; further, polymeric dyes (C09B 69/10) are also enclosed in C09B, which are reaction products of dyes with monomers or with macromolecular compounds; thereby the dye might be a repeating unit in the polymer chain or it might be connected by a covalent bond to the polymer chain as a pending group
- Pigments (coloured compounds being insoluble in liquid systems)
- Compositions comprising dyes and/or pigments and further additives (e.g. comprising polymeric dispersing agents (C09B 67/009)
- Blends of at least two dyes and/or pigments (C09B 67/0033)
- Preparation processes to prepare dyes or pigments (e.g. special methods of performing the coupling reaction of azo dyes (C09B 41/00)
- Dye or pigment preparations of special physical nature, e.g. tablets, films, extrusion, microcapsules, sheets, pads, bags with dyes (C09B 67/0097)
- Treatment of dyes or pigments without chemical reactions in order to influence the physical properties (classified in the main group C09B 67/00), e.g. acid pasting (C09B 67/0017), grinding, milling C09B 67/0002), coating C09B 67/0004), flushing (C09B 67/0021), etc.

In main group (C09B 68/00), the surface modification of pigments with chemical reactions is covered. Thereby the establishing of covalent/complex bonds of chemical groups on the surface of the pigment is the point of interest.

Certain fluorescent dyes or pigments of specific structure like Fluorescein derivatives (C09B 11/08), Rhodamine derivatives (C09B 11/24), Stilbene dyes (C09B 23/148) etc.); thereby it is mentioned, that there is no main- or subgroup which explicitly mentions properties like luminescense, fluorescense or phosphorescense; luminescent compounds are merely classified by the chemical structure of their chromophore

- Dyes, especially pigments having a certain crystal modification; special X-ray patterns (C09B 67/0025)
- Purification, Precipitation, or Filtration of dyes or pigments (C09B 67/0096)
- Dyestuff salts, e.g. salts of acid dyes with basic dyes; thereby the counter ion of the dye might not be a standard ion like Na+, K+, Ca2+, NH4+ or Cl^{-}, $SO42^{-}$, $NO3^{-}$ etc., but rather a complex non-common ion like a charged dyestuff itself or similar ions (C09B 69/02)
- The term "closely related Compounds" in the title of this sub class covers compounds, which could be seen as precursors for dyes becoming dyes after a minor modification, e.g. a chemical reaction or pH-change; so there is a clear structural similarity between the closely related compound and the dye.

Relationships with other classification places

The subclass C09B may overlap with many other subclasses relating to the use of dyes or pigments. In general, a C09B class is given to documents which describe dyes/pigments appearing to be novel as such or compositions/ preparations of dyes/pigments which appear to be novel; further, documents disclosing novel preparation processes for dyes/pigments should be put into C09B.

E.g., a document describing inks (C09D 11/00), which comprise already known dyes or pigments, should only be put into C09D 11/00; in case the inks comprise dyes or pigments not yet known in the prior art, the corresponding C09B sub-group should be given.

References

Limiting references

This place does not cover:

Preparation of the mordant compounds	C01F; C07
Intermediate organic compounds to prepare dyes/pigments	C07C; C07D
Inorganic dyes/pigments	C09C
Fermentation or enzyme-using processes to synthesise a desired chemical compound	C12P

Informative references

Attention is drawn to the following places, which may be of interest for search:

Places in relation to which this subclass is residual or which may be of interest for search:

Dyes/pigments for colouring foodstuff	A23L 5/42
Cosmetic or similar toilet preparations containing organic compounds (depending on the chromophore structure of the used dye/pigment, the corresponding sub group below A61K 8/30 should be identified for classification/search)	A61K 8/30
Medicinal preparations containing organic active ingredients (depending on the chromophore structure of the used dye/pigment, the corresponding sub group below A61K 31/00 should be identified for classification/ search)	A61K 31/00
Preparations for testing in vivo Preparation for luminescence or biological staining (depending on the kind of the used dye/pigment, the corresponding sub group below A61K 49/001 should be identified for classification/search)	A61K 49/001
Preparations for temporary colouring the hair, e.g. direct dyes	A61Q 5/065
Preparations for permanently dyeing the hair	A61Q 5/10
Dyes/pigments used in thermography, e.g. in contact thermal transfer or sublimation processes	B41M 5/385
Mass colouring of high-molecular organic compounds, organic ingredients like optical brightening agents, organic pigments	C08K 5/0041
Coatings	C09D 5/00
Inks	C09D 11/00
Pigment pastes	C09D 17/00
Dyeing or printing textiles; dyeing leather, furs, or solid macromolecular substances in any form	D06P 1/00, D06P 3/00
Dyes/pigments for dyeing paper, cardboard	D21H 21/28
Investigating or analysing materials by specific methods not covered by the preceding groups; with fluorescent label	G01N 33/533
Investigating or analysing materials by specific methods not covered by the preceding groups; involving labelled substances	G01N 33/58

Lenses	G02B 1/041
Contact lenses	G02B 1/043
Optical elements other than lenses, containing organic substances, e.g. dyes, inks or pigments	G02B 5/223
Optical elements other than lenses; Absorbing filters; absorbing filters, containing organic substances, e.g. dyes, inks or pigments	G02B 5/223
Dyes/pigments used in photosensitive materials	G03C 1/10
Dyes/pigments for colouring filters used e.g. in LCD's	G03F 7/0007
Dyes/pigments used in photoconductive layers	G03G 5/0664
Recording or reproducing by optical means, containing dyes, e.g. layers in DVD's, CD's, Blue rays	G11B 7/246
Electrolytic light sensitive devices using dyes (Dye Sensitized Solar Cells, DSSc)	H01G 9/20
Light sensitive devices; comprising an organic dye as the active light absorbing material, e.g. adsorbed on an electrode or dissolved in solution	H01G 9/2059
Solid state devices using organic materials (e.g. dyes) as the active part, or using a combination of organic materials with other materials as the active part (Organic solar cells, organic light emitting devices [OLEDs])	H01L 51/00

Special rules of classification

In this subclass, in the absence of an indication to the contrary, a compound

is classified in the last appropriate place ('Last Place Rule')

As an example the following explanation is given: In the sub-group C09B 1/02 hydroxy-anthraquinones are classified. We search a sub-group for the compound 1-hydroxy-2-chloro-anthraquinone. The correct sub-group is C09B 1/10.

Now we search a sub-group for the compound 1-hydroxy-2-chloro-3-nitro-anthraquinone; again, the correct sub-group is C09B 1/10. In case we search a sub-group for the compound 1-hydroxy-2-chloro-3-sulfo-anthraquinone, we have to choose, following the 'Last Place Rule', the sub-group C09B 1/12; to avoid a loss of information, also the group C09B 1/10 should be considered.

Glossary of terms

In this place, the following terms or expressions are used with the meaning indicated:

Onium group	ionic groups bearing a positive charge comprising nitrogen, phosphor etc. as the charged atom
Aralkyl, arylalkyl	unless other specified (exception: C09B 1/526), both sequences alkyl-aryl and aryl-alkyl are meant (see e.g. C09B 1/514 and C09B 1/515)
Carbocyclic ring	here aromatic as well as a non-aromatic rings are mentioned (no heterocyclic rings)
Sulfonated	having a SO3H or $SO3^{-}$ group attached
Sulfo	SO3H
Sulfonat	$SO3^{-}$
Leuco form	the form of a reduced dye which is normally uncoloured or only slightly coloured compared to the dye itself (e.g. indigo and its leuco-form)

Vat dyeLeuco dye	sometimes insoluble dyes (e.g. indigoid dyes) are transferred into their soluble derivatives (e.g. leuco form) by e.g. reduction and then contacted with the material to be coloured; the soluble form is then converted into its insoluble form e.g. by oxidation; such dyes are called 'vat dyes' (in German: Küpenfarbstoff)
Cyanine dyes	specific polymethine dyes having N-heterocyclic rings at both end of the polymethin chain (push-pull-system)
Acid dyes	water-soluble anionic dyes
Basic dyes	water-soluble cationic dyes
Substantive dyes (or Direct dyes)	are directly applied to the fibre from aqueous solution; especially suitable for cellulosic fibres
Mordant dyes	see definition below in the Annex for C09B 65/00
Reactive dyes	see definition below in the Annex for C09B 62/00
Disperse dyes	are generally water insoluble; the dyes are finely ground in the presence of a dispersing agent; their main use is to dye polyester
Sulfur dyes	see definition below for C09B 49/00
Lakes	A dye made insoluble in order to have pigmentary properties by precipitating the water soluble form of the dye (bearing SO3H resp. COOH groups) by salting out with cations of the rare earth metals (Ca2+, Mg2+, also Al3+)

Synonyms and Keywords

In patent documents, the following abbreviations are often used:

LCD	Liquid Crystal Display
DSSc	Dye sensitised solar cells
LED	Light Emitting Diode
OLED	Organic Light Emitting Diode
2D	two dimensional
3D	three dimensional
C.I.	means Colour Index (C.I.); refers to colorants indexed in the Colour Index International [http://www.colour-index.org/login.aspx]
µm	micrometer (10-6 meter)
Nm	nanometer (10-9 meter)
CF	Color Filter
TFT	Thin Film Transistor
DPP	Diketopyrrolopyrrole (a type of pigment, see C09B 57/004)
DVD	Digital Versatile Disc
CD	Compact Disc

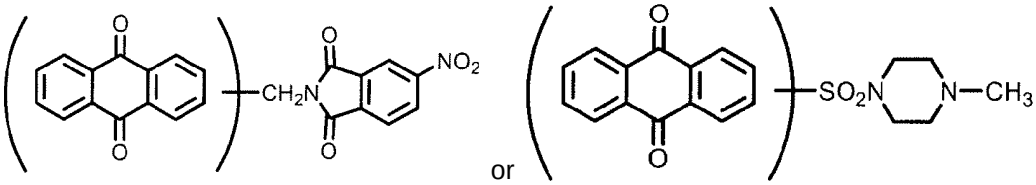
C09B 1/00

Dyes with anthracene nucleus not condensed with any other ring

Definition statement

This place covers:

For example:

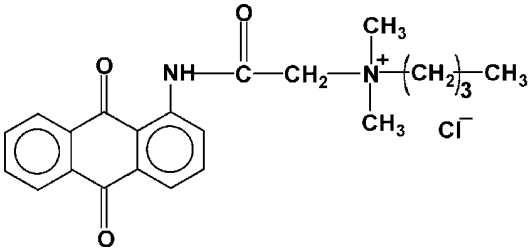


Special rules of classification

Further details of subgroups:

C09B 1/002

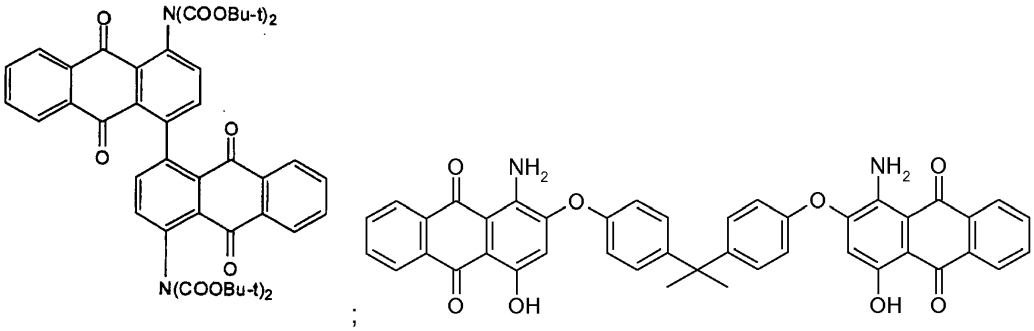
Dyes containing onium groups, e.g. ammonium groups:



C09B 1/005

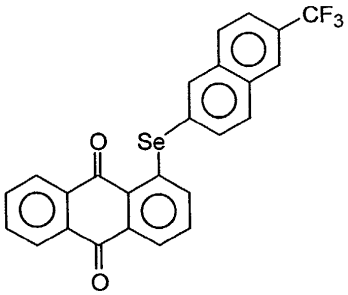
Di-anthraquinonyl and derivatives compounds:

at least two anthraquinones linked directly (see example left) or by a chemical linker (right example); in case the linker is represented by -NH- or the substituted derivative thereof, C09B 1/48 takes precedence



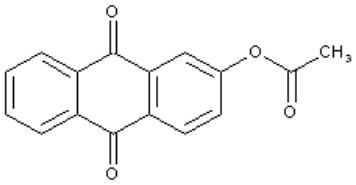
C09B 1/007

Seleno-anthraquinones



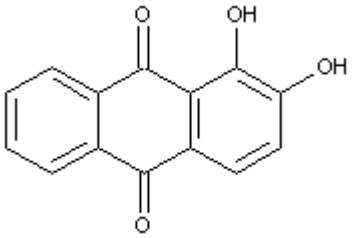
C09B 1/02

Hydroxy anthraquinones; Ethers or esters thereof



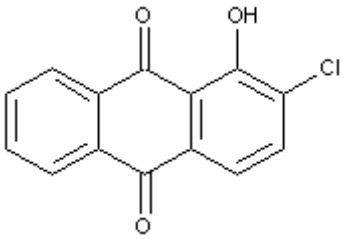
C09B 1/08

Dyes containing only OH groups



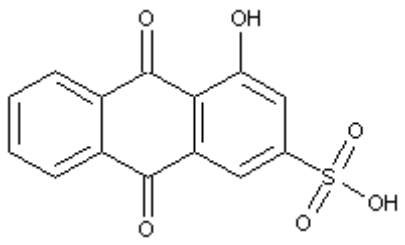
C09B 1/10

Dyes containing halogen



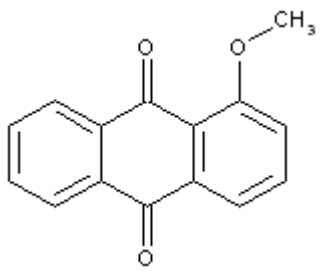
C09B 1/12

Dyes containing sulfonic acid groups



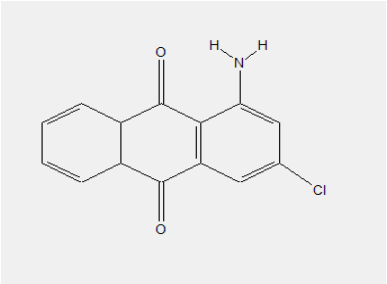
C09B 1/14

Dyes containing ether groups, e.g.:



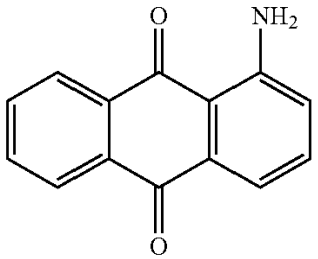
C09B 1/16

Amino anthraquinones, e.g.:



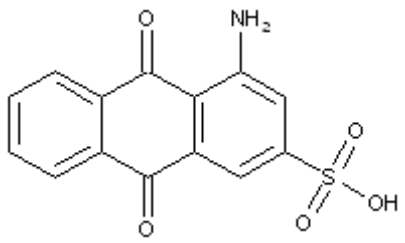
C09B 1/201

Dyes with no other substituents than the amino groups



C09B 1/202

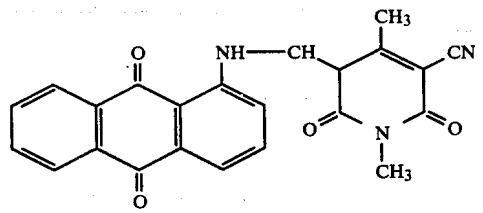
sulfonated amino anthraquinones, e.g.:



C09B 1/205

Dyes with an unsaturated C on the N atom attached to the nucleus; for C=O, C=S: C09B 1/36 takes precedence

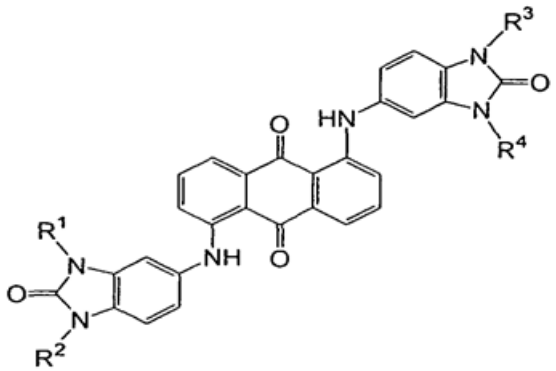
also in case of acylated amino groups: C09B 1/36 takes precedence



C09B 1/206

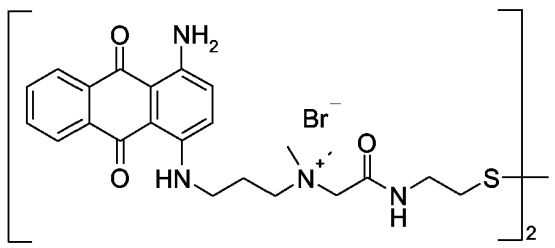
Dyes with amino groups substituted by heterocyclic radicals; for triazinic or

analogous heterocyclic radicals: C09B 1/46 takes precedence



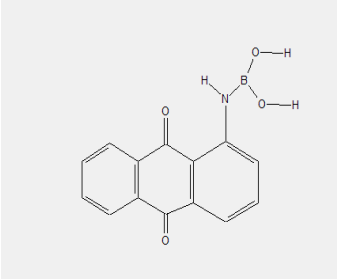
C09B 1/207

Dyes with amino groups and onium groups



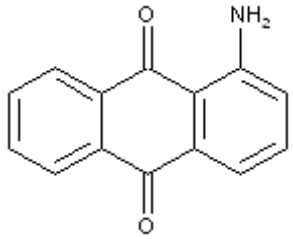
C09B 1/208

amino groups substituted by inorganic radicals, e.g.:



C09B 1/22

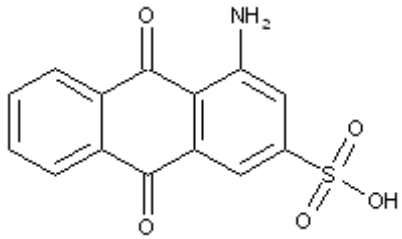
Dyes with unsubstituted amino groups



C09B 1/24

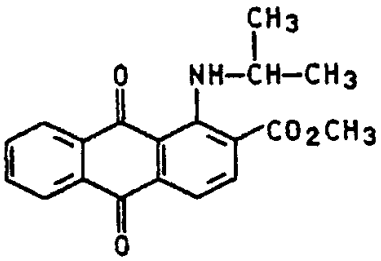
sulfonated

sulfonated dyes with unsubstituted amino groups



C09B 1/26

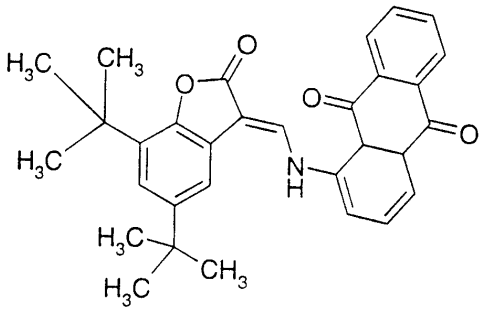
Dyes with amino groups substituted by hydrocarbon radicals



C09B 1/262

Dyes with no other substituents than the substituted amino groups

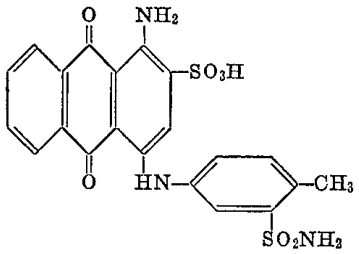
Dyes with amino groups substituted by hydrocarbon radicals and no other substituents than the substituted amino groups



C09B 1/264

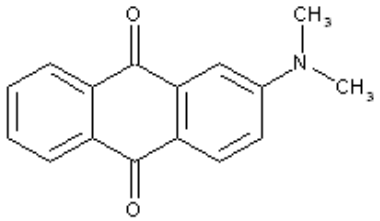
sufonated dyes with amino groups substituted by hydrocarbon radicals:

in case that both the anthracene nucleus and its substituent are sulfonated



C09B 1/28

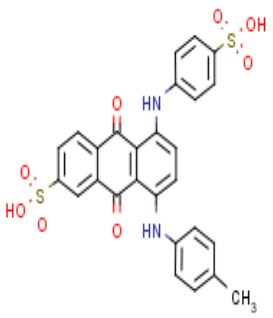
Dyes with amino groups substituted by alkyl, aralkyl, or cyclo-alkyl groups



C09B 1/30

Sulfonated dyes with amino groups substituted by alkyl, aralkyl, or cyclo-alkyl groups:

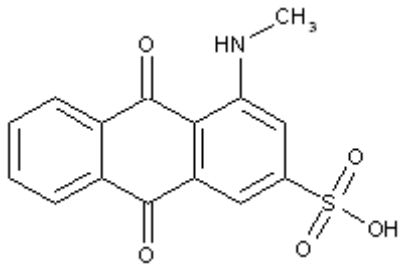
in case that both the anthracene nucleus and its substituent are sulfonated



C09B 1/303

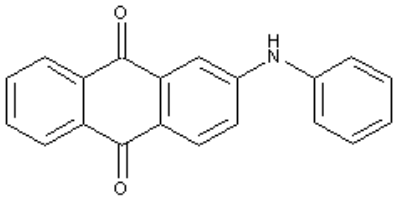
Sulfonated dyes with amino groups substituted by alkyl, aralkyl, or cyclo-alkyl groups:

only sulfonated in the anthracene nucleus



C09B 1/32

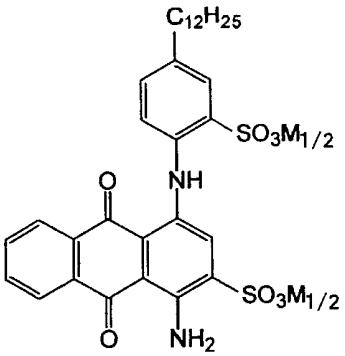
Dyes with amino groups substituted by aryl groups (anthrimides C09B 1/48 take precedence)



C09B 1/34

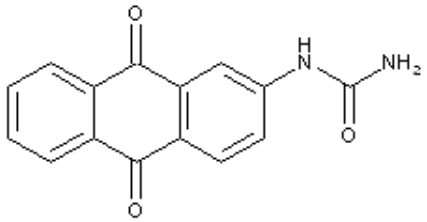
sulfonated dyes with amino groups substituted by aryl groups:

in case that both the anthracene nucleus and the aryl substituent are sulfonated



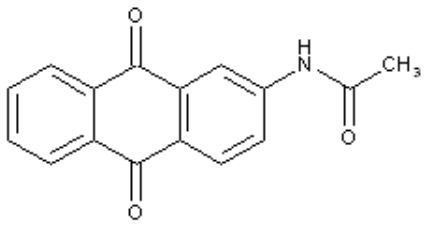
C09B 1/38

Urea or thiourea derivatives



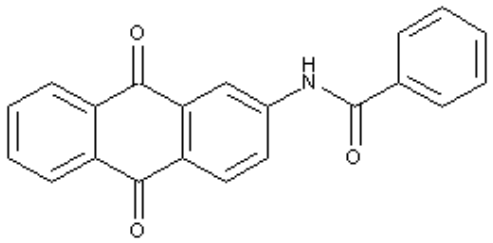
C09B 1/40

the acyl groups being residues of an aliphatic or araliphatic carboxylic acid



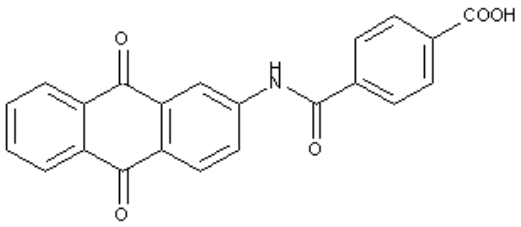
C09B 1/42

the acyl groups being residues of an aromatic carboxylic acid



C09B 1/425

the acyl groups being residues of a dicarboxylic acid; this sub group does not contain any documents (see comment to sub group C09B 1/43 below)

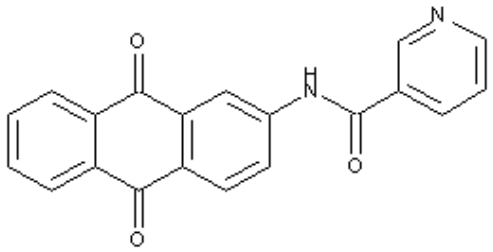


C09B 1/43

Dicarboxylic acids: this sub group covers in principle the same compounds as the sub group C09B 1/425 above; however, this sub group contains documents. It is foreseen to bring this matter in accordance with the classification Rules in a later request.

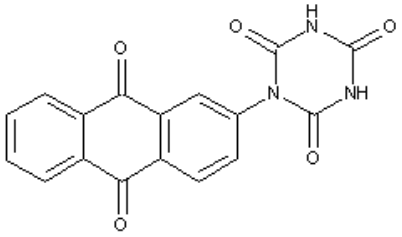
C09B 1/44

the acyl groups being residues of a heterocyclic carboxylic acid



C09B 1/46

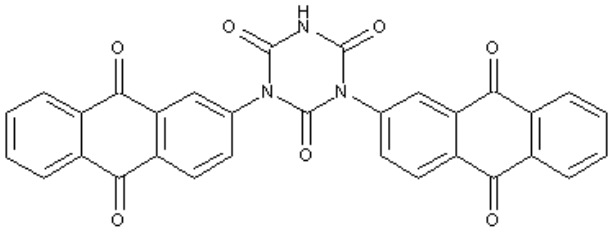
anthraquinone dyes with acylated amino groups, the acyl groups being residues of cyanuric acid or an analogous heterocyclic compound



C09B 1/467

attached to two or more anthraquinone rings

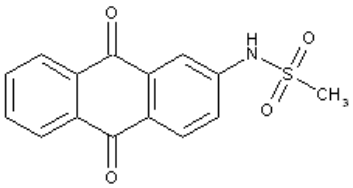
anthraquinone dyes with acylated amino groups, the acyl groups being residues of cyanuric acid or an analogous heterocyclic compound and being further attached to two or more anthraquinone rings



C09B 1/473

the acyl groups being residues of a sulfonic acid

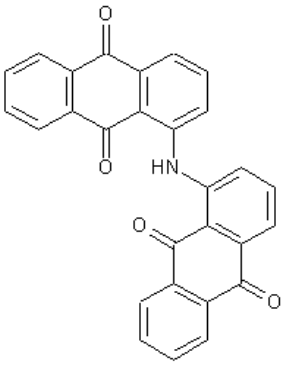
anthraquinone dyes with acylated amino groups, the acyl groups being residues of a sulfonic acid



C09B 1/48

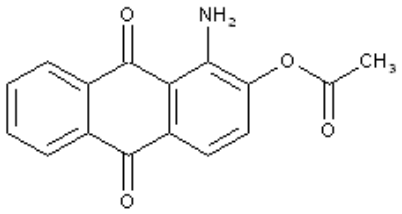
Anthrimides

two anthraquinone chromophores directly linked by -NH- or a substituted derivative thereof



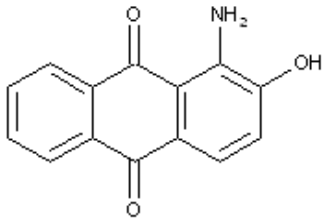
C09B 1/50

Amino-hydroxy anthraquinones; Ethers or esters thereof [Seleno-anthraquinones C09B 1/007 take precedence]



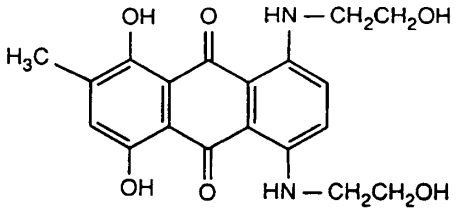
C09B 1/503

unsubstituted amino-hydroxy anthraquinone



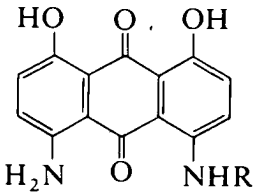
C09B 1/51

N-substituted amino-hydroxy anthraquinone



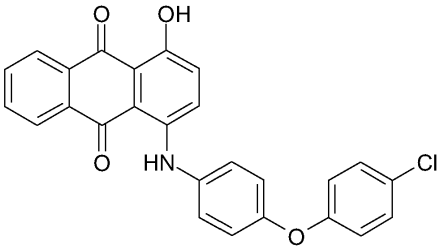
C09B 1/512

N-substituted amino-hydroxy anthraquinone, with only amino and hydroxy groups



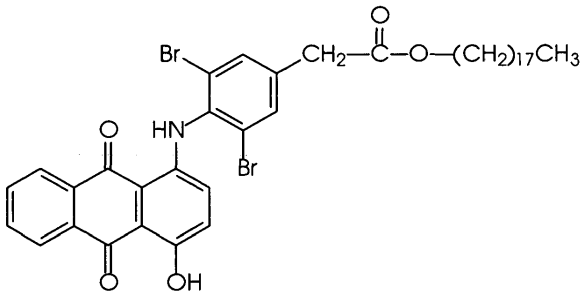
C09B 1/514

N-aryl derivatives of amino-hydroxy anthraquinones (N-aralkyl derivatives C09B 1/515 take precedence)



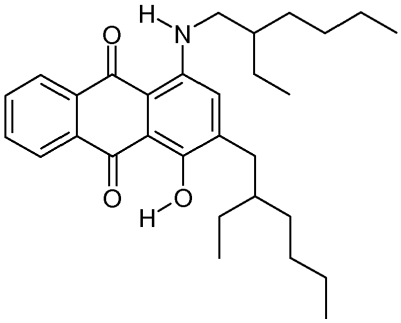
C09B 1/5145

N-substituted amino-hydroxy anthraquinones, with only amino and hydroxy groups



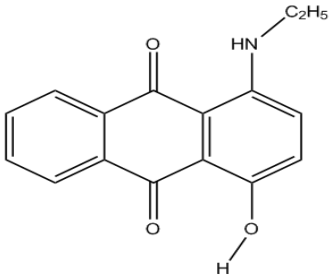
C09B 1/515

N-alkyl, N-aralkyl or N-cycloalkyl derivatives of substituted amino-hydroxy anthraquinones



C09B 1/5155

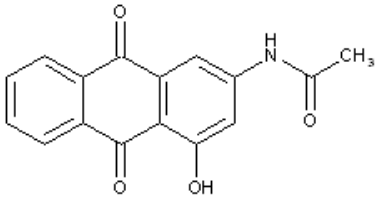
N-alkyl, N-aralkyl or N-cycloalkyl derivatives of amino-hydroxy anthraquinone with only amino and hydroxy groups



C09B 1/516

N-acylated derivatives

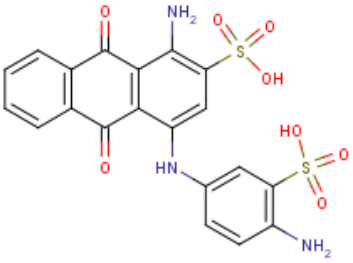
of amino-hydroxy anthraquinones



C09B 1/52

sulfonated amino-hydroxy anthraquinones:

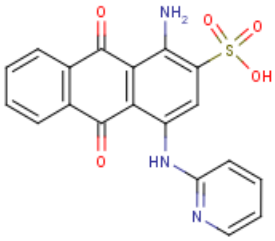
in case that both the anthracene nucleus and the substituent are sulfonated



C09B 1/523

sulfonated N-substituted amino-hydroxy anthraquinones:

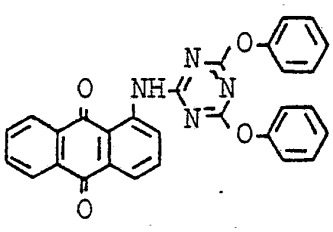
with substituents not covered by C09B 1/525 - C09B 1/528 (like heterocyclic, see example)



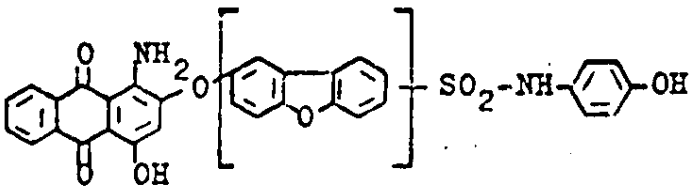
C09B 1/54

etherified derivatives of amino-hydroxy anthraquinones

with substituents not covered by C09B 1/542 - C09B 1/547 (like heterocyclic, see examples)

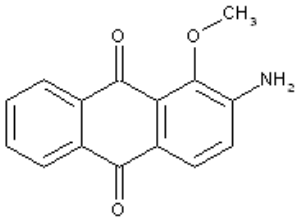


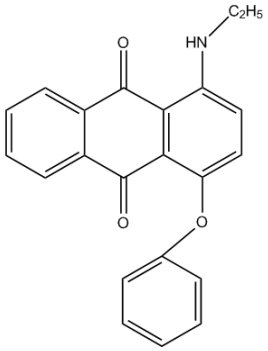
or



C09B 1/542

Amino-hydroxy anthraquinones with aliphatic, cycloaliphatic, araliphatic or aromatic ether groups, e.g.:

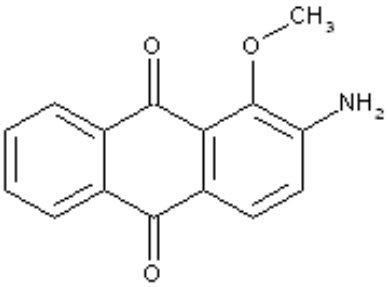


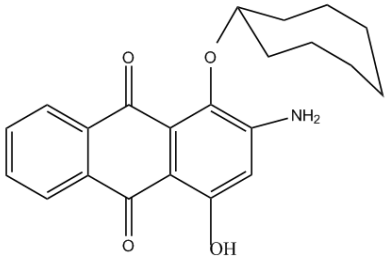


C09B 1/542 contains documents having both types of anthraquinones: compounds with aliphatic ether groups and compounds with aromatic ether groups (thereby cases are included, where the kind of ether group can vary). C09B 1/545 contains only documents with compounds with aliphatic ethers, thereby C09B 1/547 deals with compounds with aromatic ethers; in case documents contain compounds having both types of ether groups, the last place rule should be applied (C09B 1/547); in order to avoid a loss of information, also the sub group C09B 1/542 should be considered here

C09B 1/545

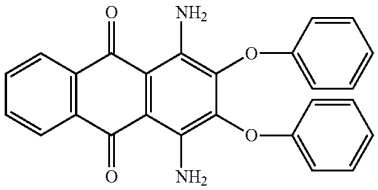
Amino-hydroxy anthraquinones with aliphatic, cycloaliphatic or araliphatic ether groups



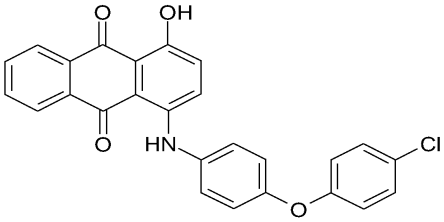


C09B 1/547

Amino-hydroxy anthraquinones with aromatic ether groups

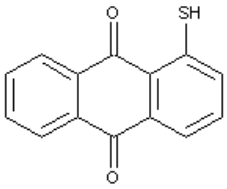


or



C09B 1/56

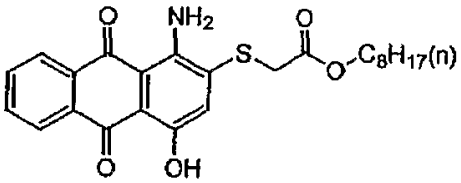
Mercapto-anthraquinones



C09B 1/58

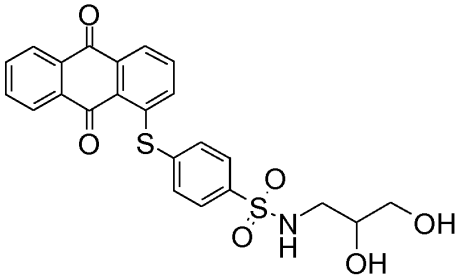
Mercapto-anthraquinones with mercapto groups substituted by aliphatic, cycloaliphatic, araliphatic or aryl radicals

for these sub groups C09B 1/58, C09B 1/585 and C09B 1/60 the same classification rule applies as in the above mentioned case concerning the sub groups C09B 1/542, C09B 1/545 and C09B 1/547



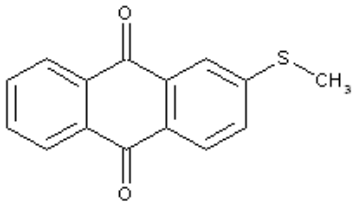
C09B 1/585

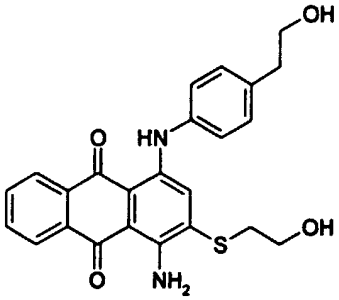
substituted by aryl radicals



C09B 1/60

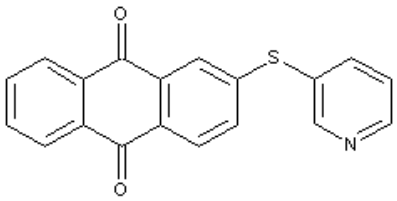
substituted by aliphatic, cycloaliphatic or araliphatic radicals;





C09B 1/62

Mercapto-anthraquinones with mercapto groups substituted by a heterocyclic ring



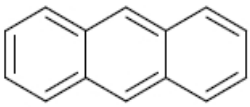
C09B 3/00

Dyes with an anthracene nucleus condensed with one or more carbocyclic rings

Definition statement

This place covers:

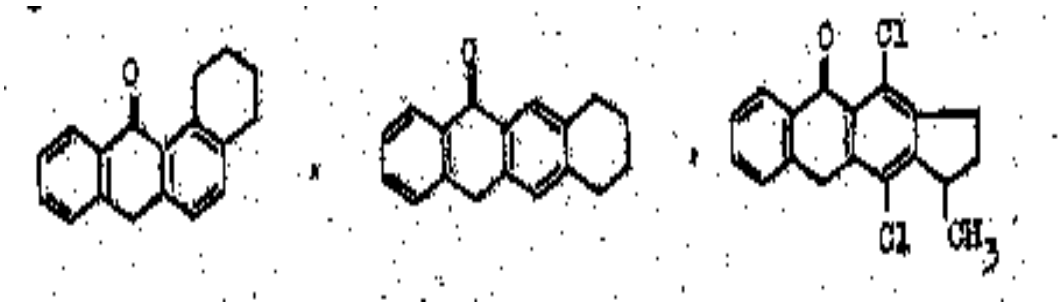
First, the anthracene nucleus is simply the aromatic ring system consisting of three 'fused' six-membered rings:

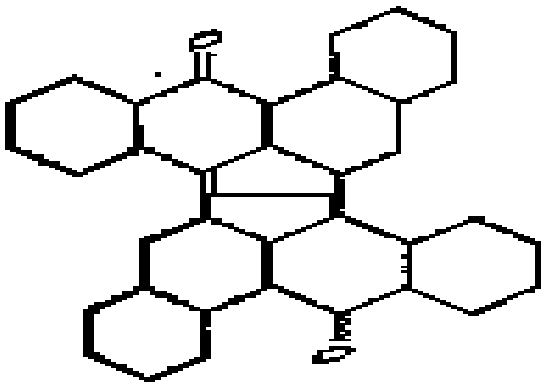
 ---> anthracene 'ground structure'

Condensed with one or more carbocyclic rings means, that, additionally to the ground structure, further rings are added by condensing them 'along to a bond'. In the three examples below an anthrone, which is based on an anthracene ground structure which additionally comprises a keto-group in the middle, is further condensed with saturated 'six-membered' rings (two compounds at the left) or with a saturated 'five-membered' ring (compound at the right). The term carbocyclic means, that hetero-atoms are excluded as members of the ring atoms (see here also the main group C09B 5/00, which deals with anthracene nucleus condensed with heterocyclic rings).

The fourth compound at the bottom could be considered to comprise two basic anthracene ground structures:

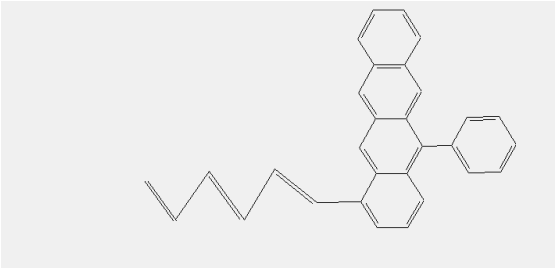
For example, documents disclosing compounds like:





Special rules of classification

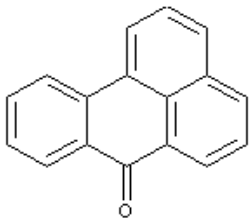
Care should be taken with view to the sub group C09B 3/78, which comprises documents disclosing one (or possibly more) specific structures not covered by the preceding subgroups C09B 3/02 up to C09B 3/76, while C09B 3/00 covers documents disclosing several structures falling under different subgroups from C09B 3/02 - C09B 3/76; all documents which are not covered by the groups C09B 3/02 up to C09B 3/76 should be put into C09B 3/78



Further details of subgroups:

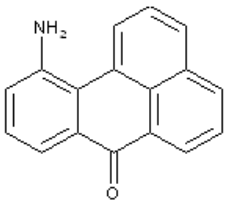
C09B 3/02

Benzanthrones



C09B 3/10

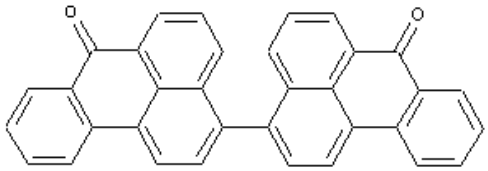
Amino derivatives



C09B 3/12

Dibenzanthronyls

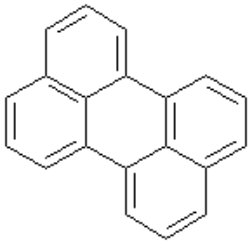
at least two benzanthrones moieties linked directly or by a chemical linker



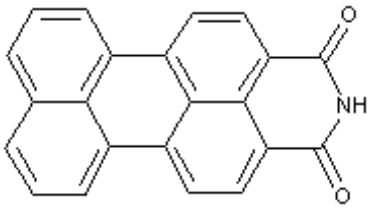
C09B 3/14

Perylene derivatives

care has to be taken with view to sub group C09B 5/62



---> C09B 3/14

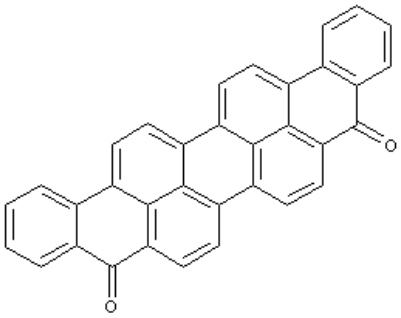


---> C09B 5/62

C09B 3/22

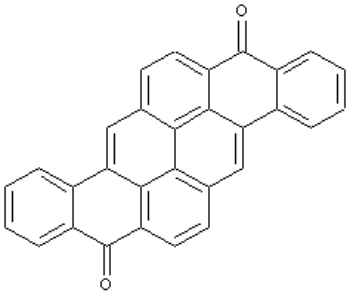
Dibenzanthrones, Isodibenzanthrones

at least two benzanthrones moieties condensed together



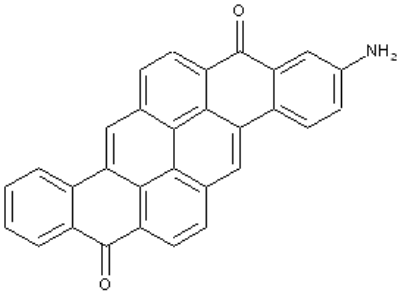
C09B 3/40

Pyranthrones



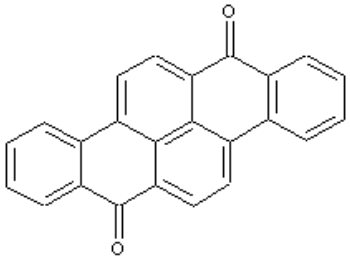
C09B 3/48

Amino derivatives of pyranthrones



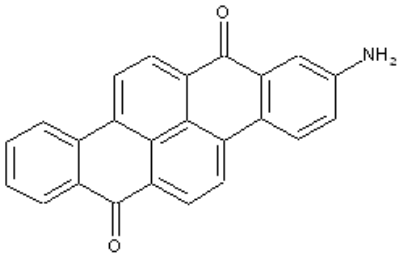
C09B 3/50

Dibenzopyrenequinones



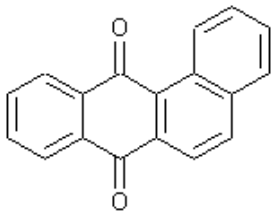
C09B 3/56

Amino derivatives of dibenzopyrenequinones



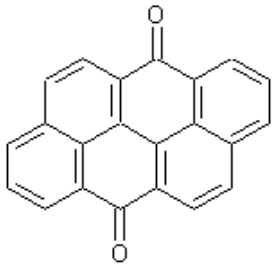
C09B 3/58

Benzanthraquinones



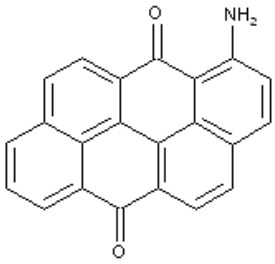
C09B 3/60

Anthanthrones



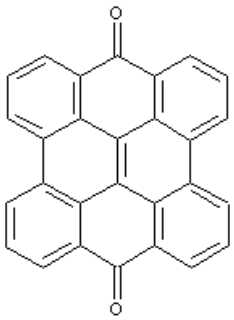
C09B 3/68

Amino derivatives of anthanthrones



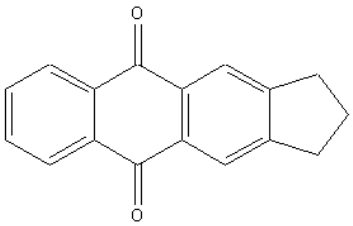
C09B 3/70

Benzo-, naphtho-, or anthra-dianthrones



C09B 3/78

Other dyes in which the anthracene nucleus is condensed with one or more carbocyclic rings (see the comment to main group C09B 3/00)



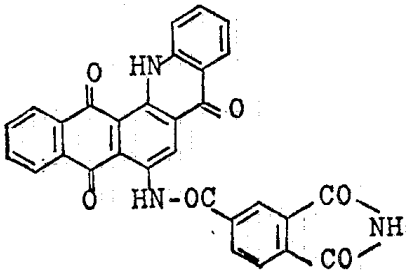
C09B 5/00

Dyes with an anthracene nucleus condensed with one or more heterocyclic rings with or without carbocyclic rings

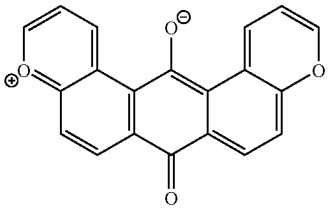
Definition statement

This place covers:

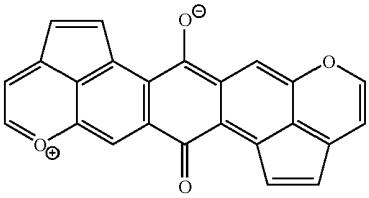
For example:



or



or



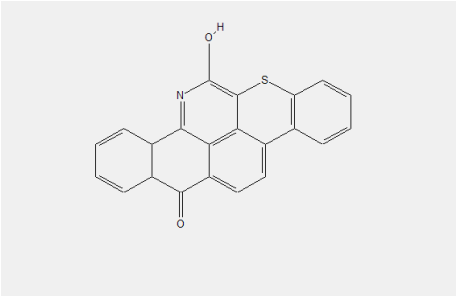
Special rules of classification

Further details of subgroups:

C09B 5/002

the heterocyclic rings being condensed in peri-position and in 1-2 or 2-3 position

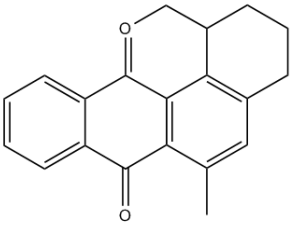
Dyes with anthracene nucleus condensed with one or more heterocyclic rings with or without carbocyclic rings, the heterocyclic rings being condensed in peri-position and in 1-2 or 2-3 position and not covered/provided by any of the C09B 5/004 - C09B 5/008 sub groups (e.g. N and S-containing hetero rings, example)



C09B 5/004

only O-containing heterorings

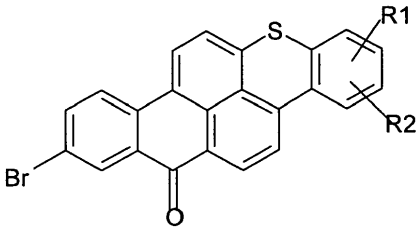
the heterocyclic rings being condensed in peri-position (see example) and in 1-2 or 2-3 position



C09B 5/006

only S-containing heterorings

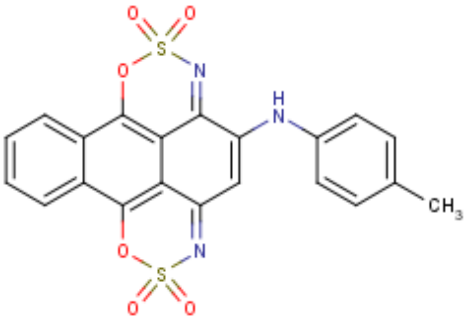
the heterocyclic rings being condensed in peri-position and in 1-2 or 2-3 position



C09B 5/022

compounds not provided for in one of the sub groups C09B 5/04 - C09B 5/20

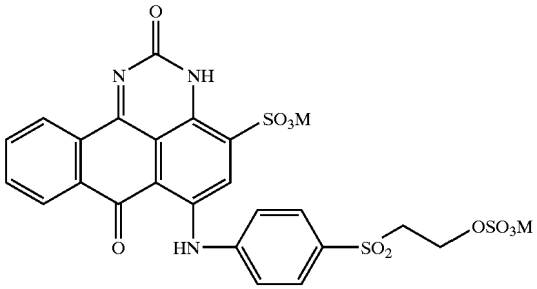
the heterocyclic rings being only condensed in peri-position



C09B 5/028

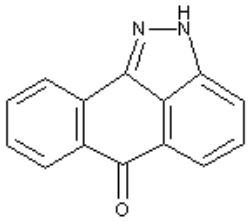
with only N-containing heterorings

the heterocyclic rings being only condensed in peri-position



C09B 5/04

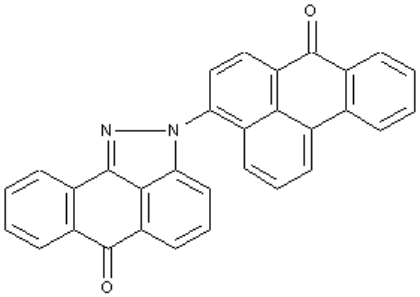
Pyrazolanthrones



C09B 5/06

Benzanthronyl-pyrazolanthrone condensation products

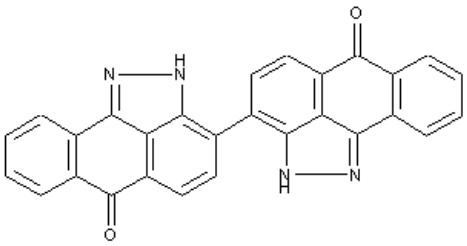
'condensation' in this context means obviously, that also two chromophores could be linked by a single covalent bond (see formula below)



C09B 5/08

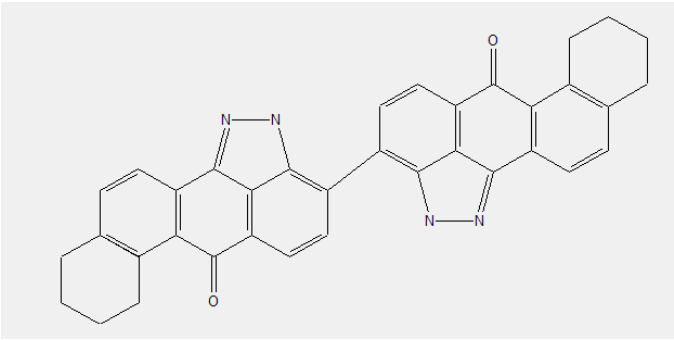
Dipyrazolanthrones

at least two pyrazolanthrones moieties linked directly or by a chemical linker



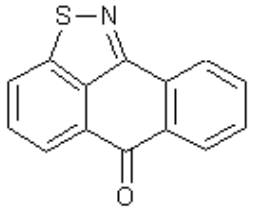
C09B 5/085

Condensation products of dipyrazolanthrones



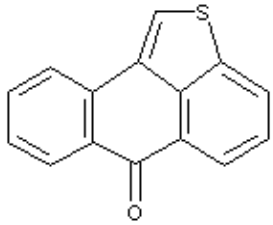
C09B 5/10

Isothiazolanthrones (see example); Isoxazolanthrones; Isoselenazolanthrones



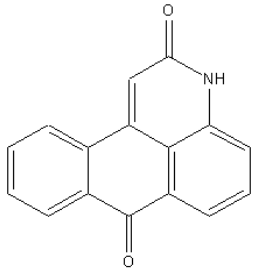
C09B 5/12

Thiophenanthrones



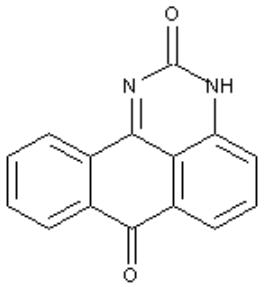
C09B 5/14

Benz-azabenzanthrones (anthrapyridones)



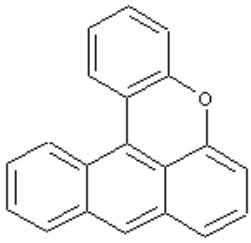
C09B 5/16

Benz-diazabenzanthrones, e.g. anthrapyrimidones



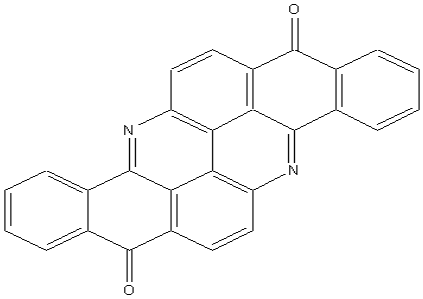
C09B 5/18

Coeroxene (see example); Coerthiene; Coeramidene; Derivatives thereof



C09B 5/20

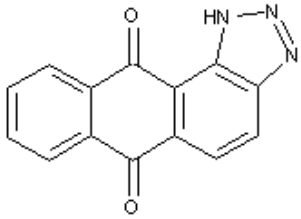
Flavanthrones



C09B 5/24

the heterocyclic ring(s) being condensed with an anthraquinone nucleus in 1-2 (see example) or 2-3 position

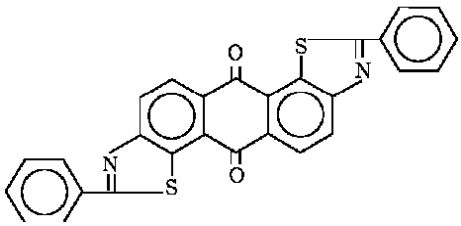
Dyes with an anthracene nucleus condensed with one or more heterocyclic rings with or without carbocyclic rings, wherein the heterocyclic ring(s) being condensed with an anthraquinone nucleus in 1-2 (see example) or 2-3 position



C09B 5/2409

not provided for in one of the sub groups C09B 5/26 - C09B 5/62

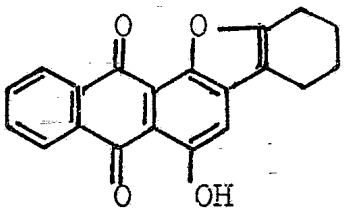
the heterocyclic ring(s) being condensed with an anthraquinone nucleus in 1-2 (see example) or 2-3 position and not provided for in one of the sub groups C09B 5/26 - C09B 5/62



C09B 5/2418

with only oxygen-containing heterorings

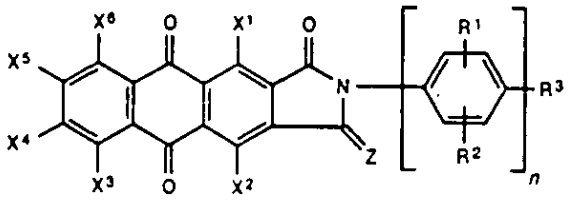
the heterocyclic ring(s) being condensed with an anthraquinone nucleus in 1-2 (see example) or 2-3 position



C09B 5/2445

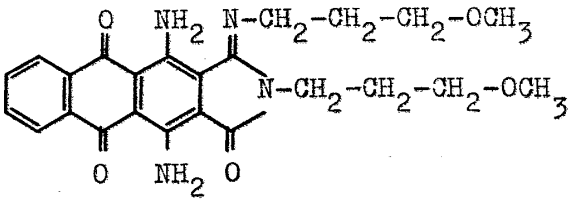
Phtaloyl isoindoles

the isoindole ring being condensed with an anthraquinone nucleus in 1-2 or 2-3 position (see example)



C09B 5/2454

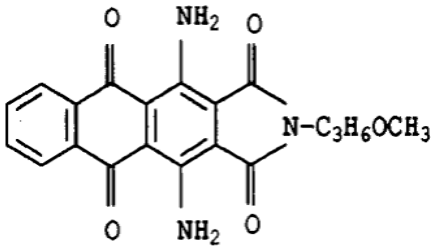
5,6-phtaloyl-dihydro-isoindoles



C09B 5/2463

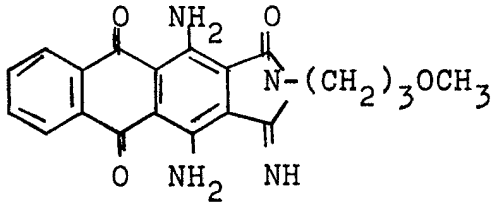
1,3 oxo or imino derivatives

means that the oxo or imino function is independently located in the 1,3 - position (below you see the 1,3-oxo derivative)



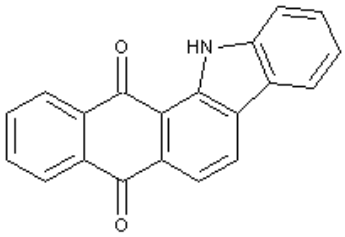
C09B 5/2481

1-oxo-3-imino derivatives, e.g.:



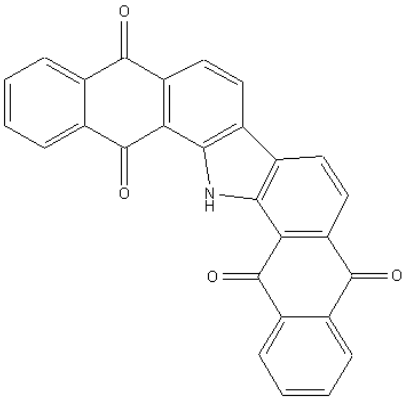
C09B 5/26

Carbazoles of the anthracene series



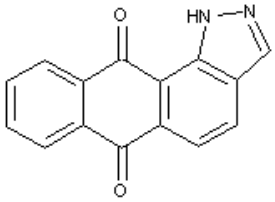
C09B 5/28

Anthrimide carbazoles



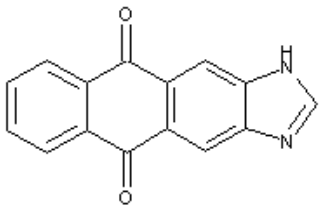
C09B 5/30

1,2-azoles of the anthracene series



C09B 5/32

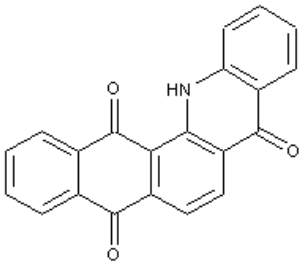
1,3-azoles of the anthracene series



C09B 5/34

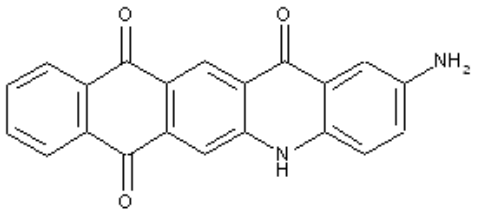
Anthraquinone acridones or thioxanthones

Anthraquinone acridones (see example below), anthraquinone thioxanthones (with S instead of NH)



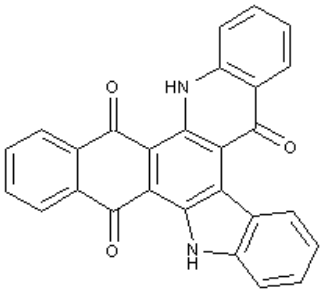
C09B 5/36

Amino acridones



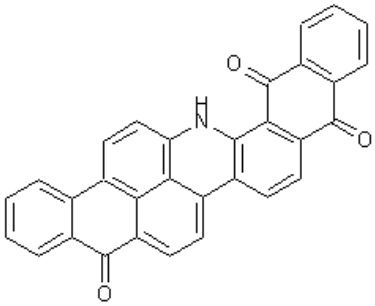
C09B 5/38

Compounds containing acridone and carbazole rings



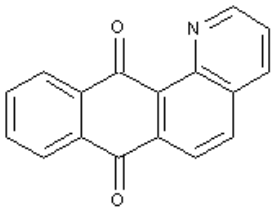
C09B 5/40

Condensation products of benzanthronyl-amino anthraquinones



C09B 5/42

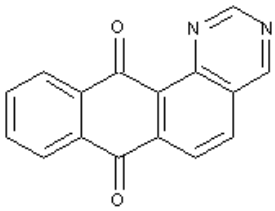
Pyridino anthraquinones



C09B 5/44

Azines of the anthracene series

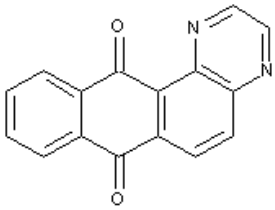
(example below: 1,3-diazine)



C09B 5/46

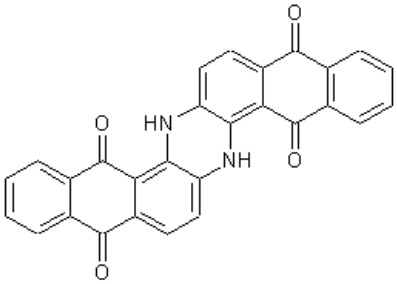
Para-diazines

condensed with 1,4-diazine



C09B 5/48

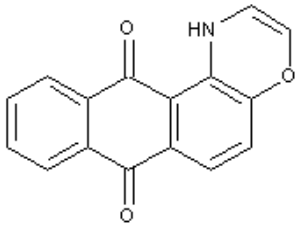
Bis-anthraquinonediazines (indanthrone)



C09B 5/60

Thiazines; Oxazines (the example below is the oxazine)

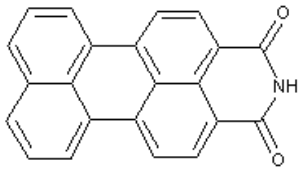
the example below is the oxazine; thiazines have S instead of O



C09B 5/62

Cyclic imides or amidines of peri-dicarboxylic acids of the anthracene, benzanthrene, or perylene series

care has to be taken with view to sub group C09B 3/14



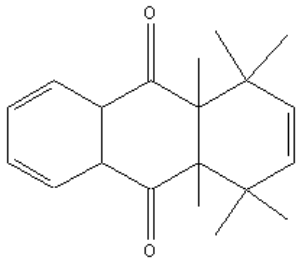
C09B 6/00

Anthracene dyes not provided for above

Definition statement

This place covers:

As an example for a compound not falling under C09B 1/00 - C09B 5/00 see below (see e.g. US4113749):



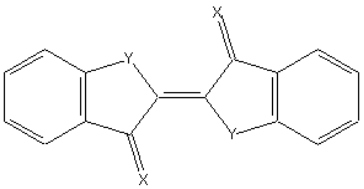
C09B 7/00

Indigoid dyes

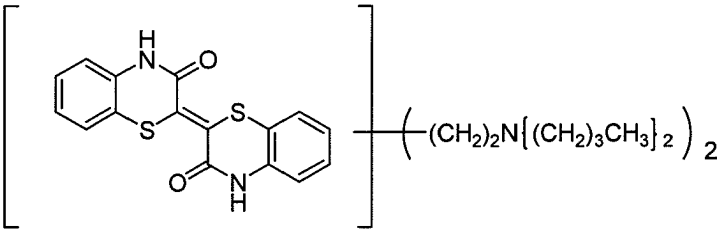
Definition statement

This place covers:

Indigoid dyes and derivatives not covered/provided by its sub-groups (example up: wherein X is O, S, etc., while Y means NH; O, S, etc. or example down)



or

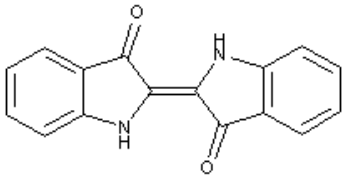


Special rules of classification

Further details of subgroups:

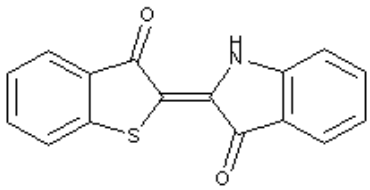
C09B 7/02

Bis-indole indigos



C09B 7/06

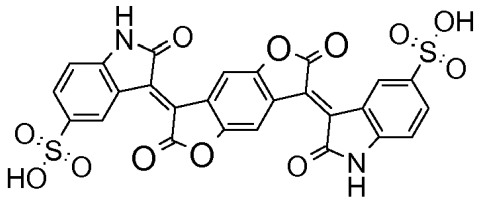
Indone-thionaphthene indigos



C09B 7/08

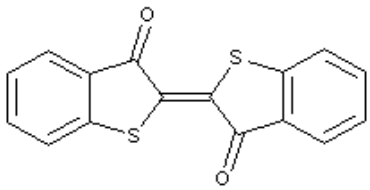
Other indole-indigos

not covered by the upper groups: e.g. with other heteroatom instead of NH (like O, see bis-oxodihydro-indolylene-benzodifuranone from example)



C09B 7/10

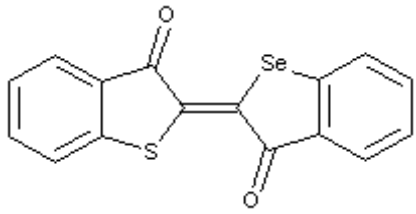
Bis-thionaphthene indigos



C09B 7/12

Other thionaphthene indigos

not covered by the upper groups (see example with Se)



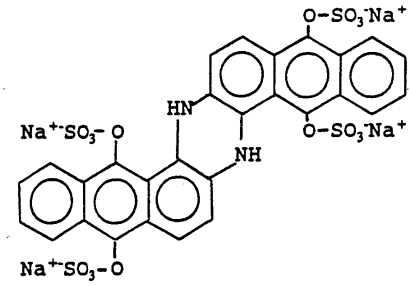
C09B 9/00

Esters or ester-salts of leuco compounds of vat dyestuffs

Definition statement

This place covers:

Esters or ester-salts of leuco compounds of vat dyestuffs of other dyes not covered by C09B 9/02 and C09B 9/04 (example)



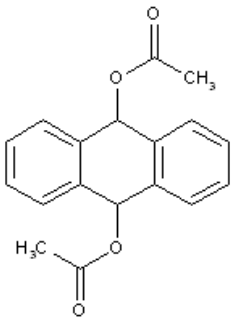
Special rules of classification

Further details of subgroups:

C09B 9/02

of anthracene dyes

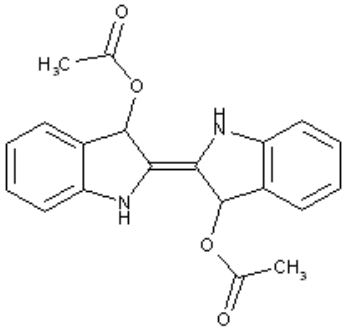
Esters or ester-salts of leuco compounds of vat dyestuffs of anthracene dyes



C09B 9/04

of indigoid dyes

Esters or ester-salts of leuco compounds of vat dyestuffs of indigoid dyes



C09B 11/00

Diaryl- or thriarylmethane dyes

Definition statement

This place covers:

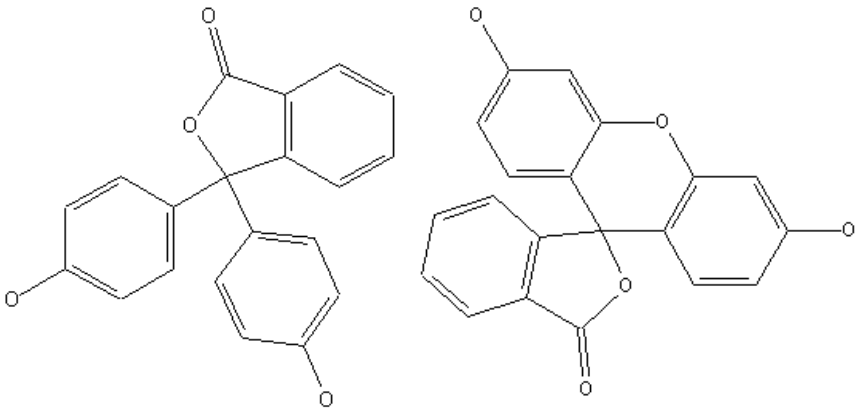
Diaryl- or triarylmethane dyes; generally the coloured forms of these dyes have a sp2-hybridisation at the central C-atom

Special rules of classification

Further details of subgroups:

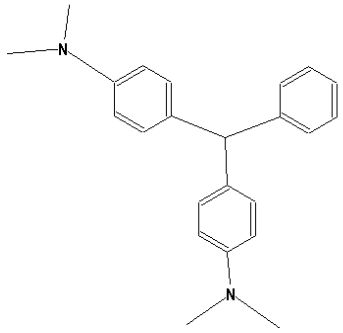
C09B 11/08

Phthaleins, e.g. Phenolphthaleine (left) and Fluoresceine (right)



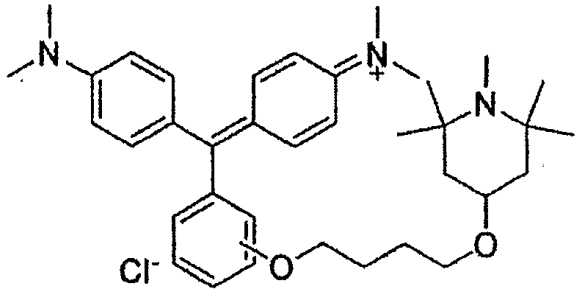
C09B 11/12

Amino derivatives of triarylmethanes without any OH group bound to an aryl nucleus



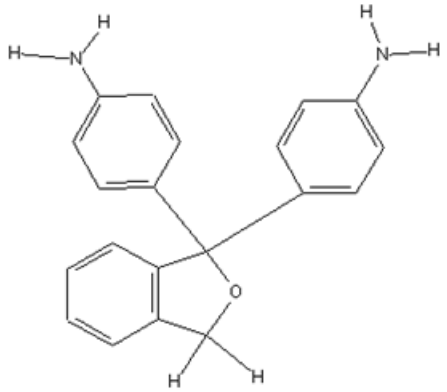
C09B 11/22

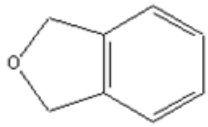
Amino derivatives of triarylmethanes containing OH groups bound to an aryl nucleus and derivatives thereof (like ethers (example) and esters)



C09B 11/24

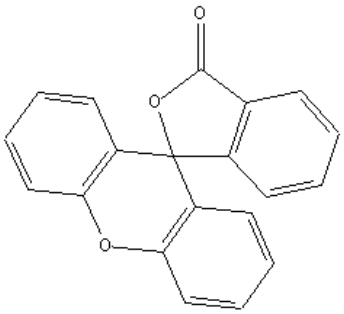
Phthaleins containing amino groups (see left); example for a phthalane (see right):



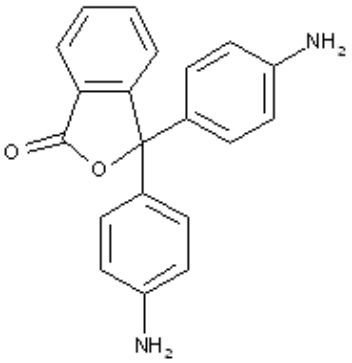


thereby the phthalane itself has the structure:

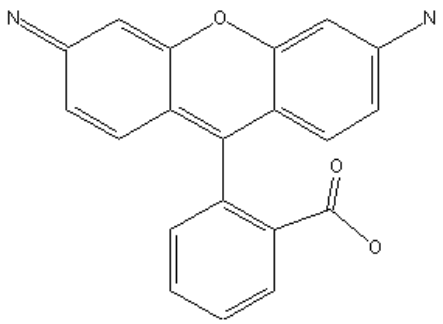
fluorans:



phthalides:

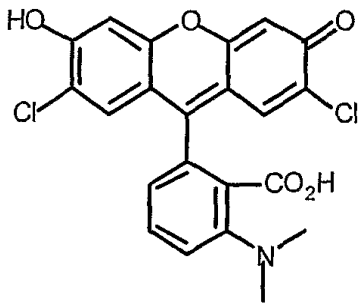


example for rhodamine:



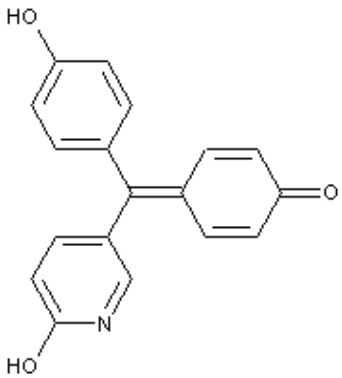
C09B 11/245

Phthaleins having both OH and amino substituent(s) on an aryl ring



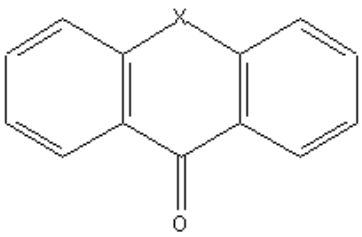
C09B 11/26

Triarylmethane dyes in which at least one of the aromatic nuclei is heterocyclic



C09B 11/28

Pyronines (xanthon: X=O; thioxanthon: X=S; selenoxanthan X=Se; telluroxanthon X=Te)



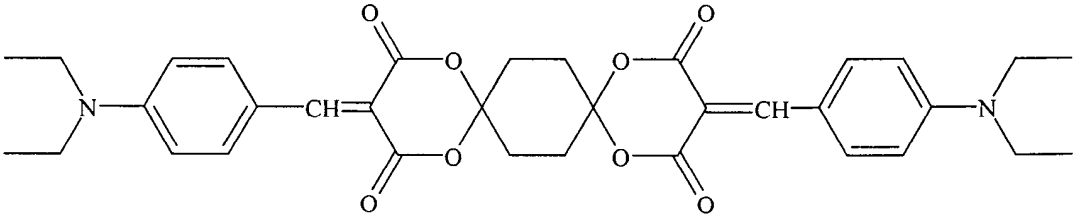
C09B 13/00

Oxyketone dyes

Definition statement

This place covers:

Oxyketone dyes not covered by its sub groups (example)

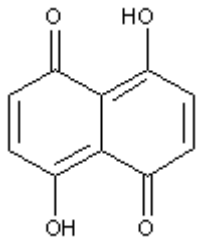


Special rules of classification

Further details of subgroups:

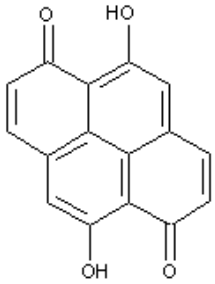
C09B 13/02

Oxyketone dyes of the naphthalene series, e.g. naphthazarin



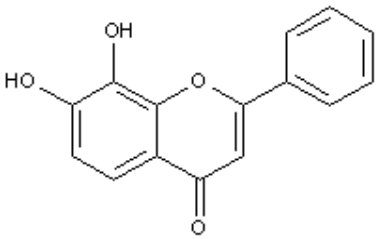
C09B 13/04

Oxyketone dyes of the pyrene series



C09B 13/06

Oxyketone dyes of the acetophenone series, means here: derivatives of:



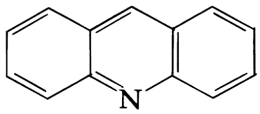
C09B 15/00

Acridine dyes

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



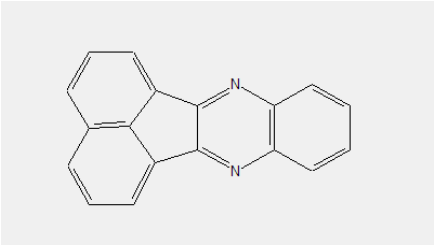
C09B 17/00

Azine dyes

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.

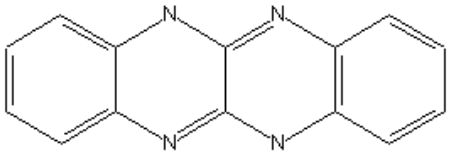
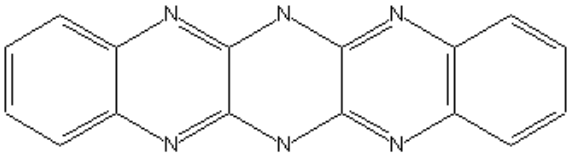


Special rules of classification

Further details of subgroups:

C09B 17/005

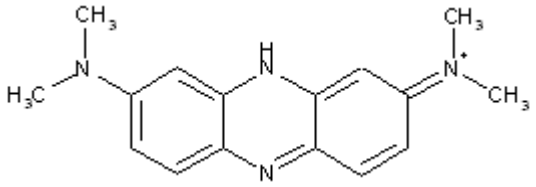
Azine dyes containing at least four ortho-condensed rings with at least two N-atoms in the system, e.g. fluoflavine (left), fluorubine (right)


,


C09B 17/02

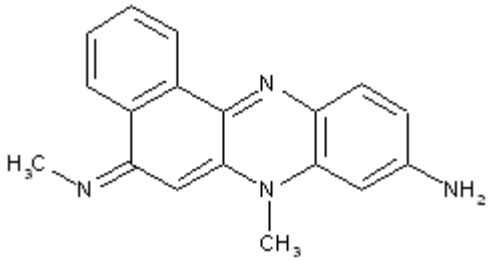
Azine dyes of the benzene series

Nigrosines are black azine dyes closely related to indulines, thereby their structures are not clearly defined; they should be classified here in C09B 17/02



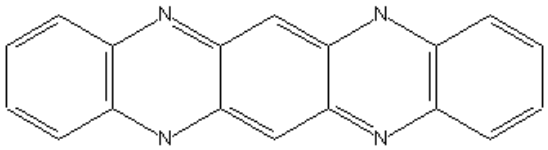
C09B 17/04

Azine dyes of the naphthalene series



C09B 17/06

Fluorindine or its derivatives



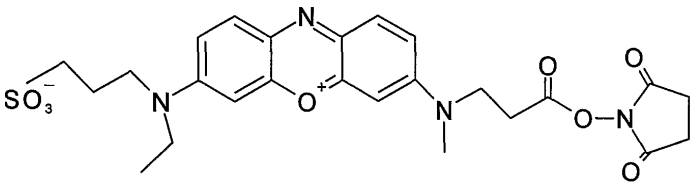
C09B 19/00

Oxazine dyes

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.

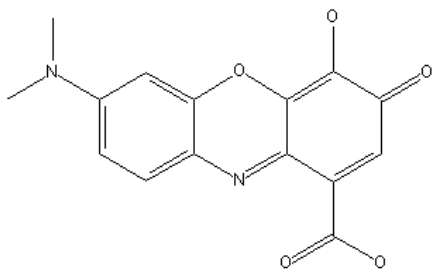


Special rules of classification

Further details of subgroups:

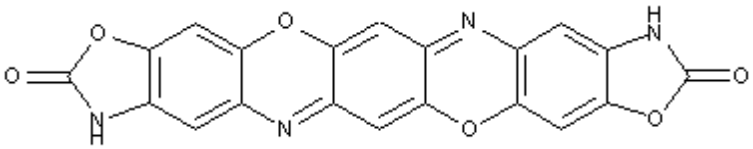
C09B 19/005

Gallocyanine dyes



C09B 19/02

Bisoxazines prepared from aminoquinones



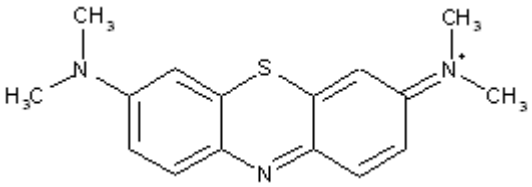
C09B 21/00

Thiazine dyes

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



C09B 23/00

Methine or polymethine dyes, e.g. cyanine dyes

Definition statement

This place covers:

Methine or polymethine dyes, e.g. cyanine dyes; thereby methine or polymethine dyes comprise one or more CH-moieties linked with each other in order to establish a conjugated system: -CH[=CH-]x=, thereby x is zero or bigger.

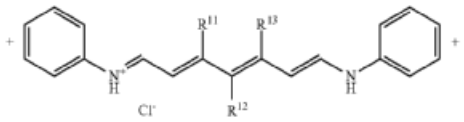
Special rules of classification

Concerning the classification method with view to the sub groups C09B 23/02 up to C09B 23/086 and C09B 23/10 up to C09B 23/107: in case a document comprises at the same time dyes with one, three, five and seven methin groups in the chain, put it into the sub groups C09B 23/04, C09B 23/06, C09B 23/083 and C09B 23/086; in case a document comprises at the same time dyes with e.g. two and four methin groups in the chain, put it into the sub groups C09B 23/105 and C09B 23/107. Although this stays in contradiction to the classification philosophy of the last-place-rule, it has been done so in the past.

Further details of subgroups:

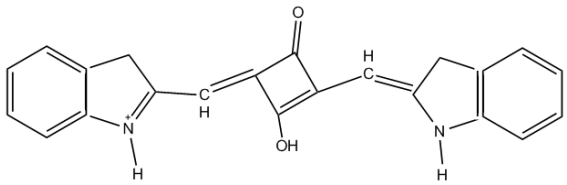
C09B 23/0008

[N :substituted on the polymethine chain]



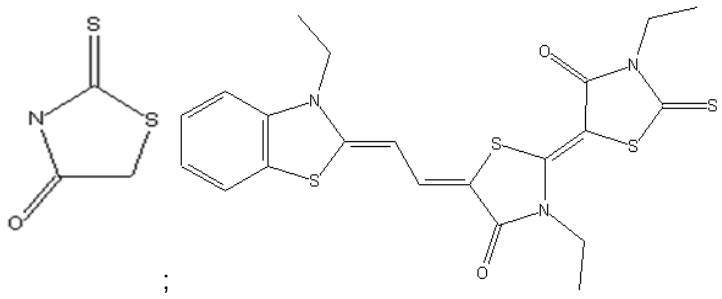
C09B 23/0066

the polymethine chain being part of a carbocyclic ring, (e.g. benzene, naphtalene, cyclohexene, cyclobutenene-quadratic acid)



C09B 23/0083

the polymethine chain being part of an heterocyclic ring, thereby the heteroring being rhodanine (left) in the chain (see example right)

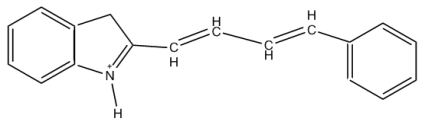


;

C09B 23/0091

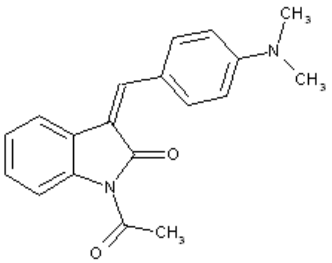
[N :having only one heterocyclic ring atom at one end of the methin chain, e.g. hemicyanines, hemioxonol (styryl dyes see C09B 23/14)]

Methine dyes having only one heterocyclic ring at one end of the methine chain, e.g. hemicyanine dyes (see formula below)



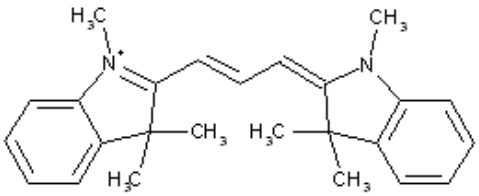
C09B 23/04

Monomethine dyes, wherein the polymethine chain contains only one ⟩CH group



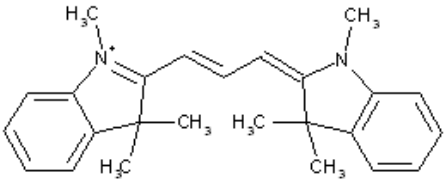
C09B 23/06

Cyanine dyes, wherein the polymethine chain contains three ⟩CH group



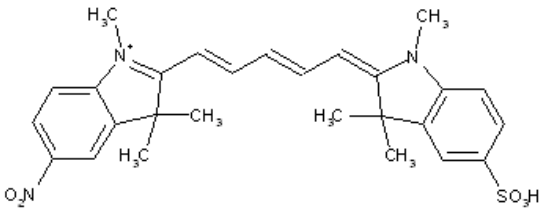
C09B 23/08

Cyanine dyes, wherein the polymethine chain contains more than three ⟩CH group



C09B 23/083

Cyanine dyes, wherein the polymethine chain contains five ⟩CH group

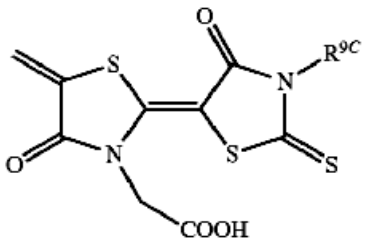


C09B 23/10

The polymethine chain containing an even number of CH-groups styryl dyes C09B 23/14 (C09B 23/14 takes precedence)

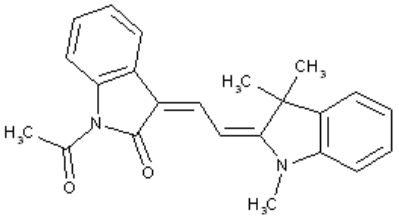
C09B 23/102

two heterocyclic rings linked carbon-to-carbon (C09B 7/00 takes precedence)



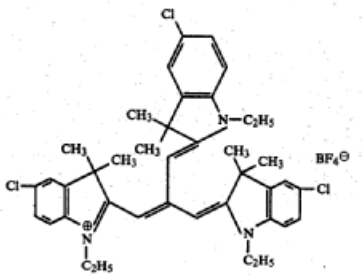
C09B 23/105

Cyanine dyes, wherein the polymethine chain contains an even number like two ⟩CH groups



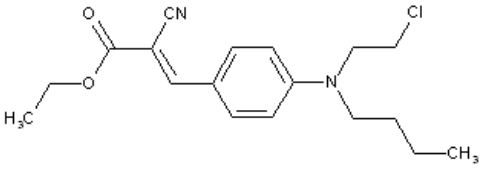
C09B 23/12

the polymethine chain being branched branched means that the substituent on the polymethine chain forms a new conjugated system ,e.g. most trinuclear cyanine dyes



C09B 23/14

Styryl dyes



C09B 23/141

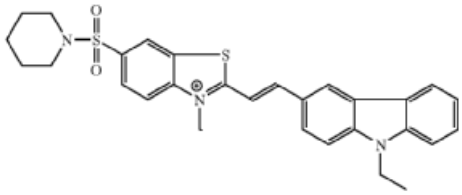
Bis styryl dyes containing two radicalsC6H5-CH=CH-

C09B 23/145

the ethylene chain carrying a heterocyclic residue, e.g. heterocycle-CH=CH-C6H5

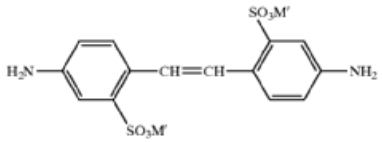
C09B 23/146

(Benzo)thiazolstyrylamino dyes



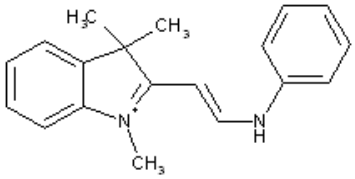
C09B 23/148

Stilbene dyes containing the moiety-C6H5-CH=CH-C6H5 (stilbene azo dyes C09B 29/00)



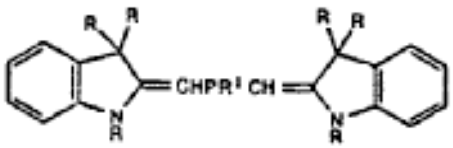
C09B 23/16

the polymethine chain containing hetero atoms



C09B 23/168

containing only phosphorus atoms, i.e. phosphacyanine



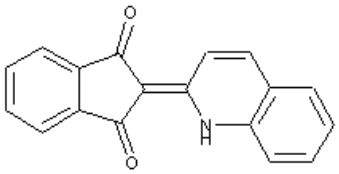
C09B 25/00

Quinophthalones

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



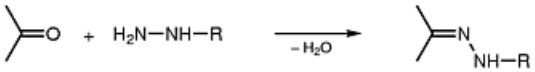
C09B 26/00

Hydrazone dyes; Triazene dyes

Definition statement

This place covers:

Hydrazones could be considered as chemical entities resulting from a reaction of a ketone with hydrazine:

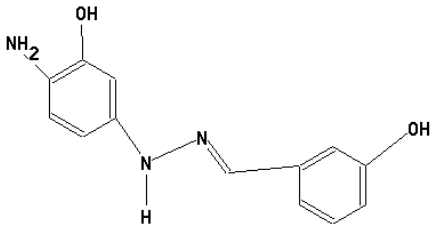


R = H : Hydrazone
R = C_6H_5: Phenylhydrazone

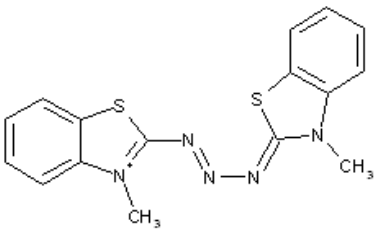
Hydrazone dyes represent therefore chromophores in which e.g. two aromatic systems are linked by such a hydrazone moiety (see formula below, left).

Triazene dyes could be considered as chromophores which comprise a chemical group (e.g. a linker) showing a sequence of three nitrogen atoms in a row; the conjugation (alternating double and single bonds) is still established over the whole chromophore (see formula below, right).

For example:



or

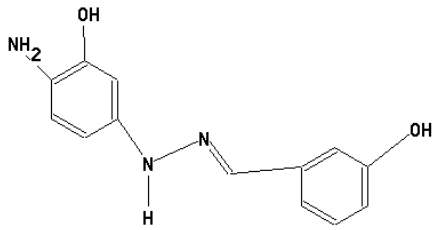


Special rules of classification

Further details of subgroups:

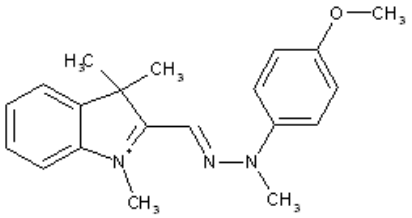
C09B 26/02

Hydrazone dyes (for hydrazone-azo dyes: C09B 56/18 takes precedence)



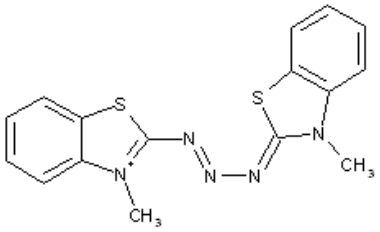
C09B 26/04

Cationic



C09B 26/06

Triazene dyes (triazene-azo dyes C09B 56/20)



C09B 27/00

Preparations in which the azo group is formed in any way other than by diazotising and coupling, {e.g. oxidation}

Definition statement

This place covers:

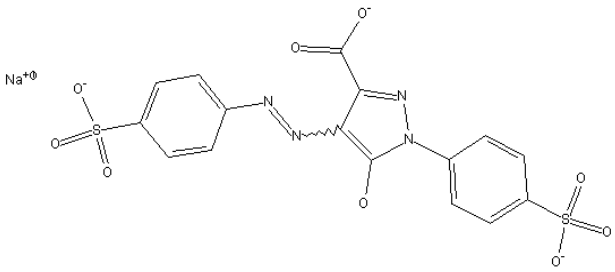
Further examples for preparing azo dyes could also be e.g. the condensation of nitro compounds under basic conditions; a coupling reaction starting from two amines and an oxidoreductase enzyme; reaction between e.g. an N-heterocyclic hydrazine with a phenanthrene quinone etc.

Special rules of classification

Further details of subgroups:

C09B 27/06

Tartrazines



C09B 29/00

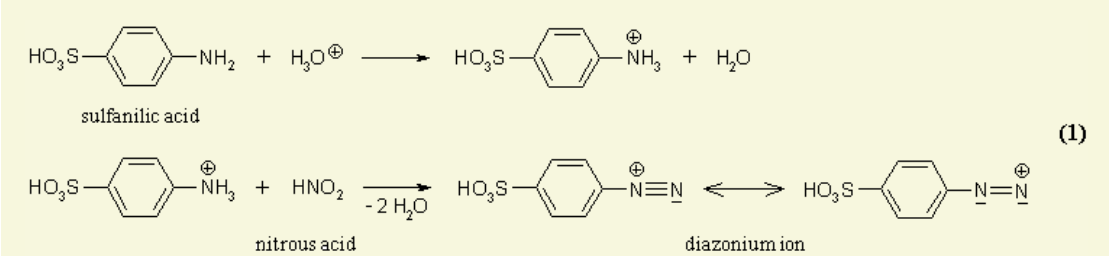
Monoazo dyes prepared by diazotising and coupling

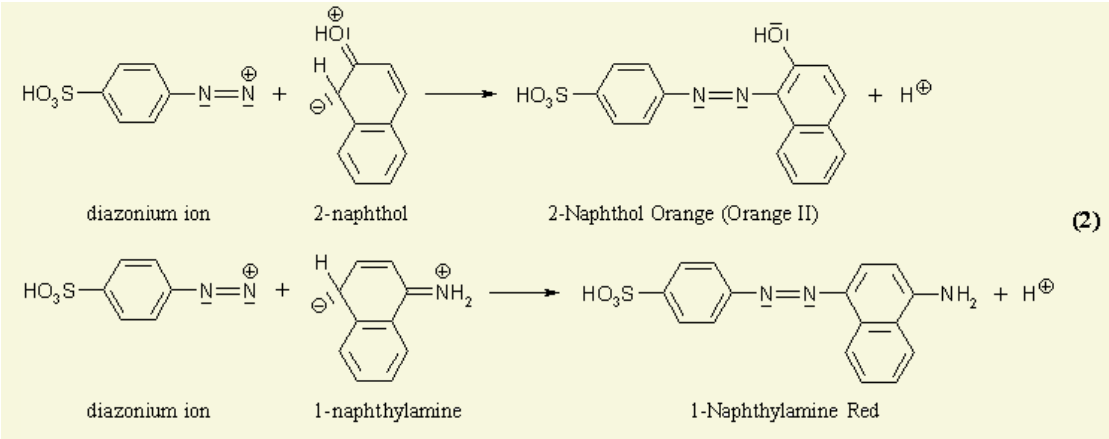
Definition statement

This place covers:

Azo dyes could be considered as compounds which are built up by aromatic or heteroaromatic systems which are connected with each other via one or more entities of the so-called azo group; the azo group is the bivalent linker -N=N- comprising two nitrogen atoms. Thereby the conjugation (alternating double and single bonds) is established over the whole chromophore. Monoazo dyes simply comprise merely one azo-group which links two chemical groups (e.g. aromatic systems like the phenyl group) to result in a coloured compound. The scheme below shows the synthesis of a typical mono-azo dye.

Monoazo Dyes prepared in the conventional manner as shown in the scheme here below:





Special rules of classification

Note(s): In these main groups (Azo dyes C09B 29/00 - C09B 39/00) and related sub groups, arrows in the formulae of the various types of azo dyes indicate which part of an azo dye, prepared by

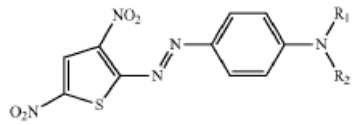
diazotising and coupling, is derived from the diazo component and which part is derived from the coupling component. The arrow is pointing to the part derived from the coupling component.

In case the "coupling direction" is not described in the document/application, both possible coupling directions should be classified

Further details of subgroups:

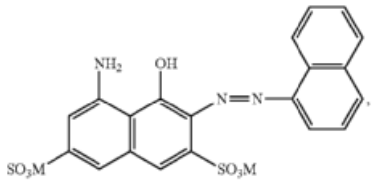
C09B 29/0003

from diazotized anilines



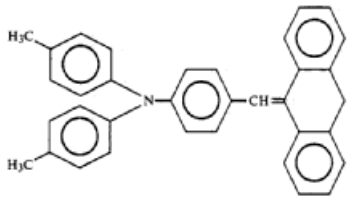
C09B 29/0014

from diazotized amino naphthalene



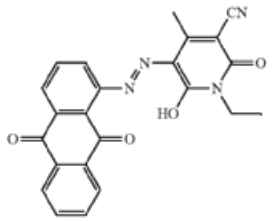
C09B 29/0018

[N :from diazotized amInopolycyclic rings]



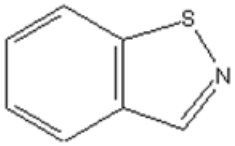
C09B 29/0022

[N :from diazotized aminoanthracene]



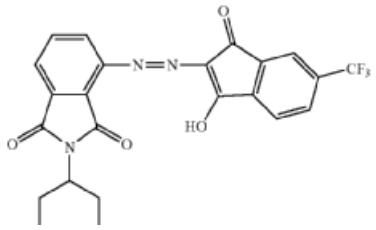
C09B 29/0081

Isothiazoles or condensed isothiazoles



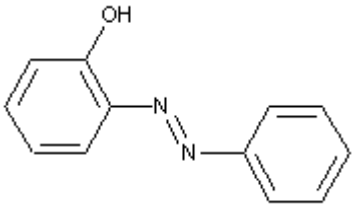
C09B 29/0096

from other diazotized amino heterocyclic rings



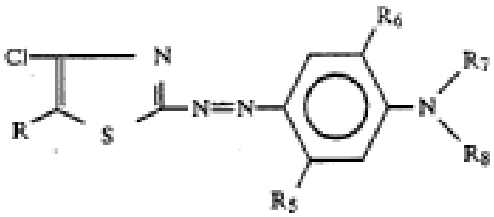
C09B 29/02

from diazotised o-amino-hydroxy compounds



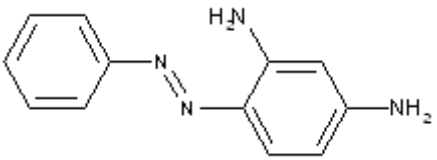
C09B 29/06

from coupling components containing amino as the only directing group



C09B 29/08

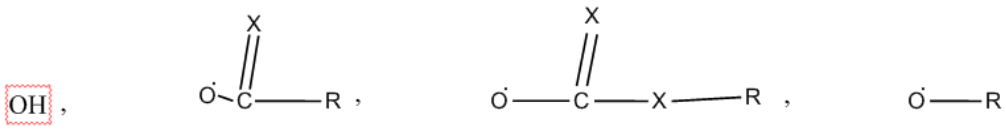
Amino benzenes



C09B 29/0813

free of acid groups

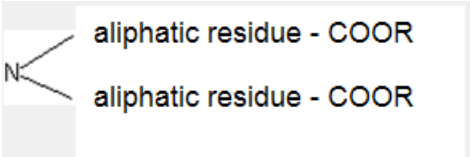
substituted by (see formulas below), thereby X being O,S,NR; R being hydrocarbonyl



C09B 29/0817

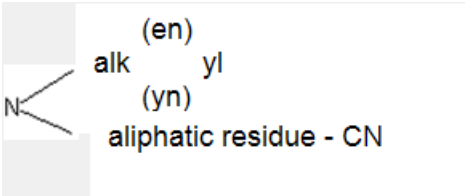
substituted by -CO...

having the substitution below:



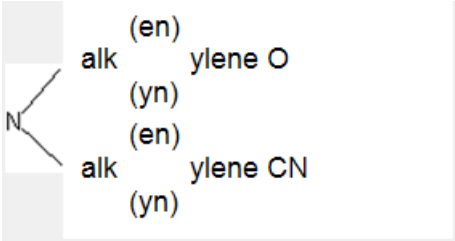
C09B 29/0825

having the substitution below:



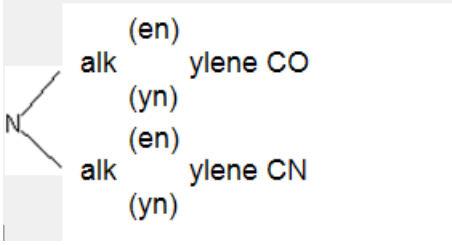
C09B 29/0826

having the substitution below:



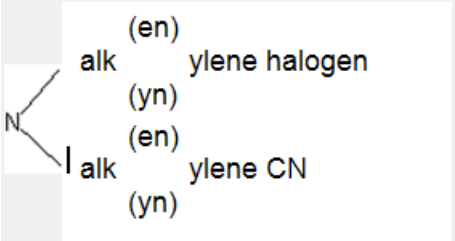
C09B 29/0827

having the substitution below:



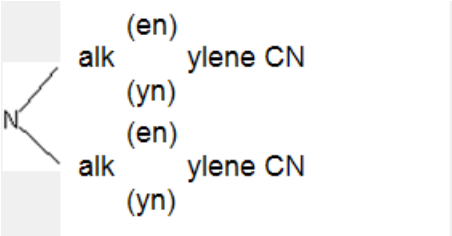
C09B 29/0828

having the substitution below:



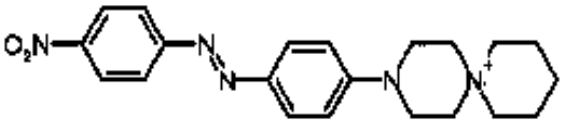
C09B 29/0829

having the substitution below:

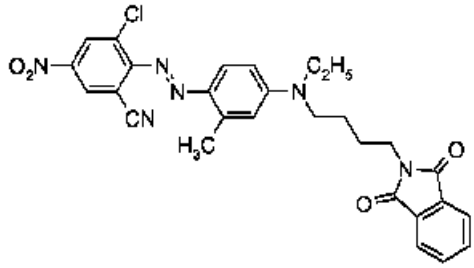


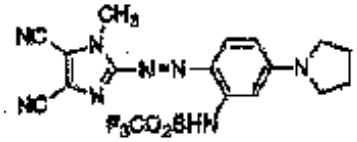
C09B 29/083

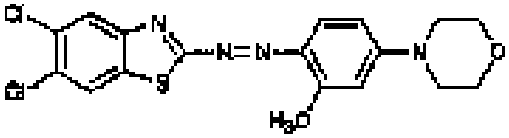
having the substitution below:



; represents e.g. the following structures:

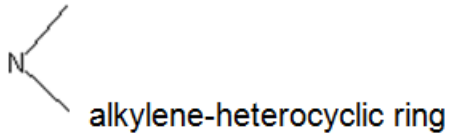






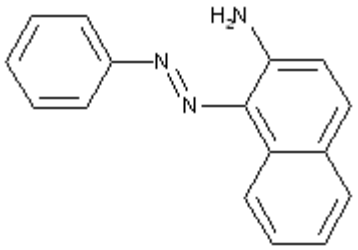
C09B 29/0832

having the substitution below:



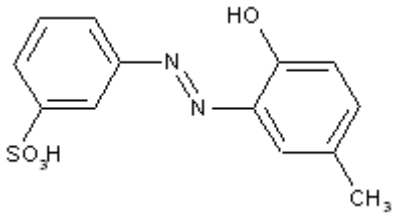
C09B 29/095

Amino naphthalenes



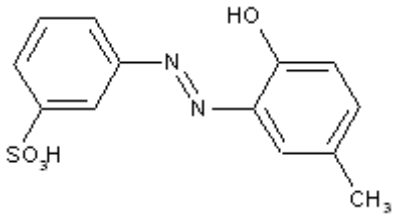
C09B 29/10

from coupling components containing hydroxyl as the only directing group



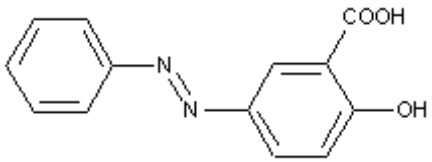
C09B 29/12

of the benzene series



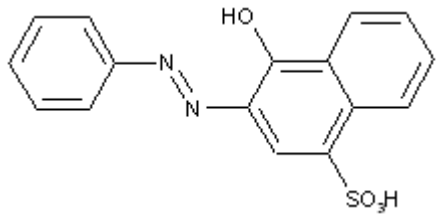
C09B 29/14

Hydroxy carboxylic acids



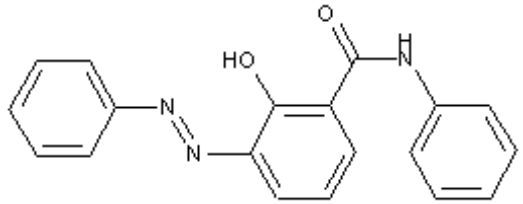
C09B 29/16

Naphthol-sulfonic acids



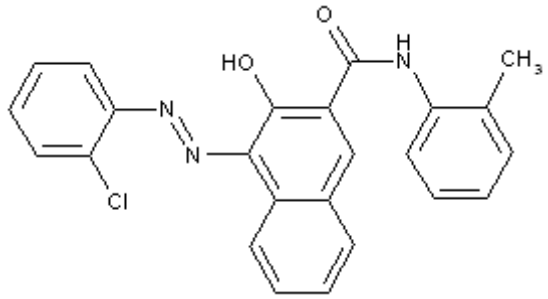
C09B 29/18

ortho-Hydroxy carbonamides



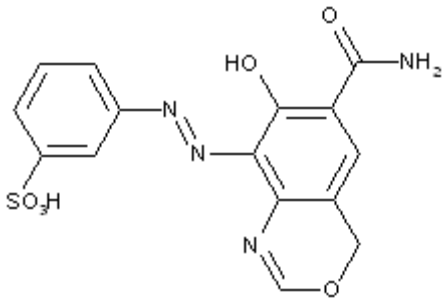
C09B 29/20

of the naphthalene series



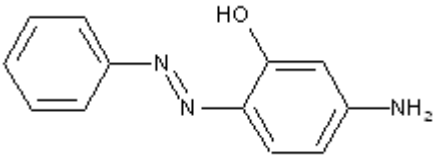
C09B 29/22

of heterocyclic compounds



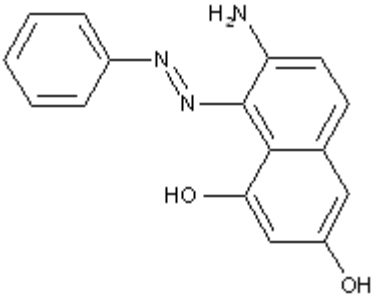
C09B 29/26

Amino phenols



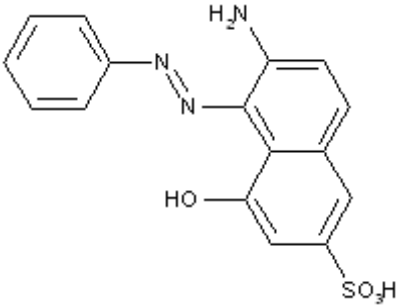
C09B 29/28

Amino naphthols



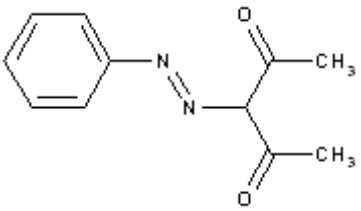
C09B 29/30

Amino naphtholsulfonic acid



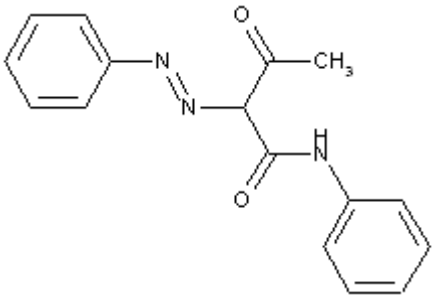
C09B 29/32

from coupling components containing a reactive methylene group



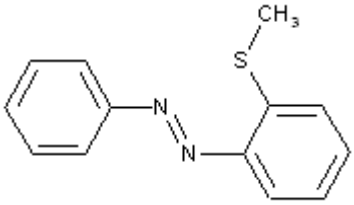
C09B 29/33

Aceto- or benzoylacetylarylides



C09B 29/34

from other coupling components

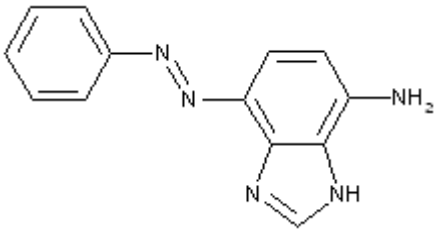


C09B 29/36

from heterocyclic compounds

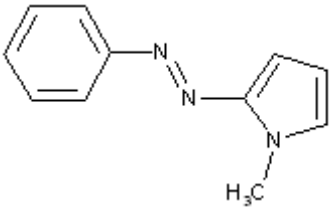
C09B 29/3604

containing only a nitrogen as heteroatom



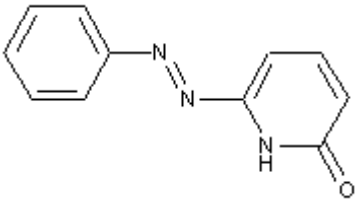
C09B 29/3608

containing a five-membered heterocyclic ring with only one nitrogen as heteroatom



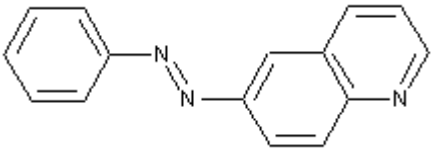
C09B 29/3617

containing a six-membered heterocyclic with only one nitrogen as heteroatom



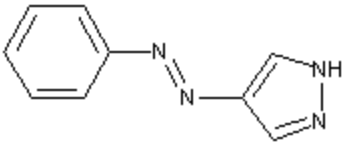
C09B 29/3643

from quinolines or hydrogenated quinolines



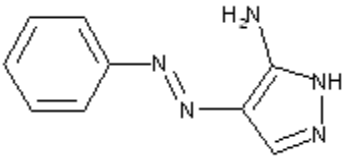
C09B 29/3652

containing a 1,2-diazoles or hydrogenated 1,2-diazoles



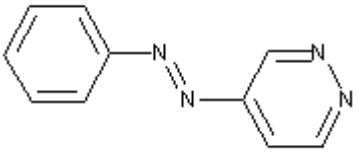
C09B 29/3656

containing amino-1,2-diazoles



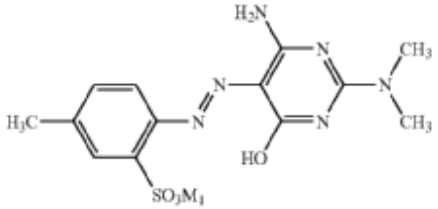
C09B 29/3665

containing a six-membered heterocyclic ring with two nitrogen atoms



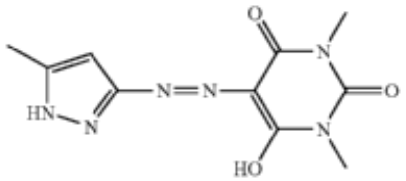
C09B 29/3669

from a pyrimidine ring



C09B 29/3673

Barbituric acid and derivatives thereof



C09B 31/00

Disazo and polyazo dyes of the type A->B->C, A->B->C->D, or the like, prepared by diazotising and coupling

Definition statement

This place covers:

Disazo and polyazo dyes of the type A->B->C, A->B->C->D, or the like, prepared by diazotising and coupling and the following main groups up to C09B 35/00:

the arrows (->) indicate the coupling direction; in most cases the letter K represents the coupling component of the last step.

In case the "coupling direction" is not described in the document/application, both possible coupling directions should be classified

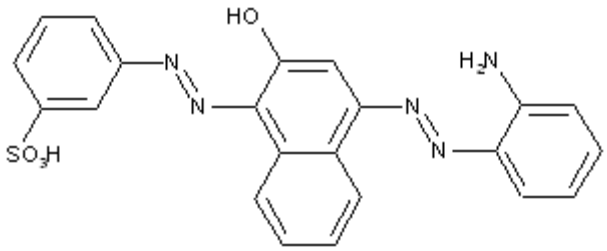
Special rules of classification

Note(s): In these main groups (Azo dyes C09B 29/00 - C09B 39/00) and related sub groups, arrows in the formulae of the various types of azo dyes indicate which part of an azo dye, prepared by diazotising and coupling, is derived from the diazo component and which part is derived from the coupling component. The arrow is pointing to the part derived from the coupling component.

Further details of subgroups:

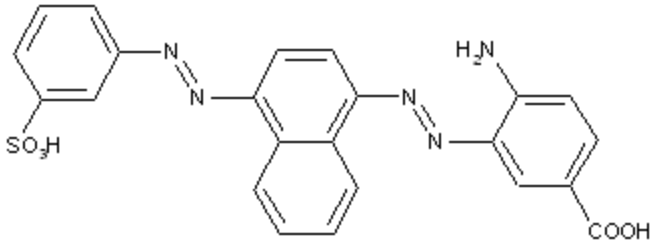
C09B 31/043

Amino-benzenes



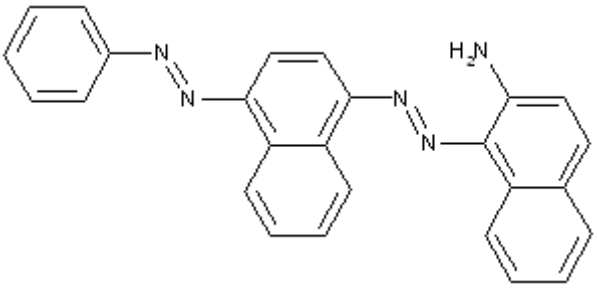
C09B 31/047

containing acid groups, e.g. -CO2H, -SO3H, -PO3H2, -OSO3H, -OPO2H2; Salts thereof



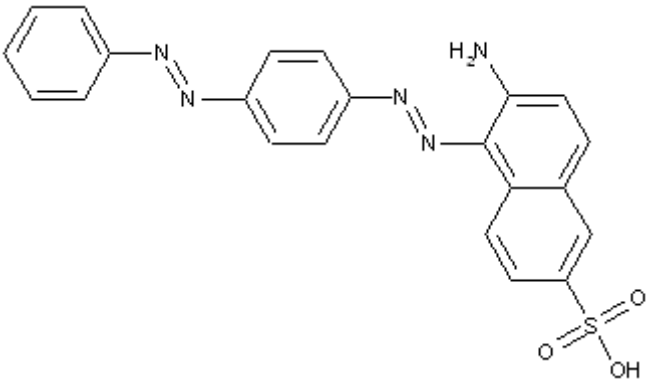
C09B 31/053

Amino naphthalenes



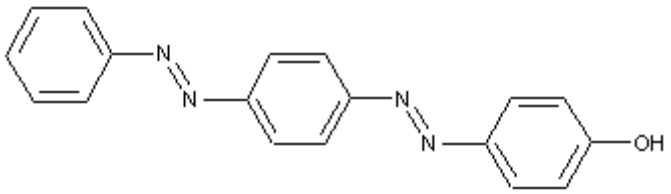
C09B 31/057

containing acid groups, e.g. -CO2H, -SO3H, -PO3H2, -OSO3H, -OPO2H2; Salts thereof



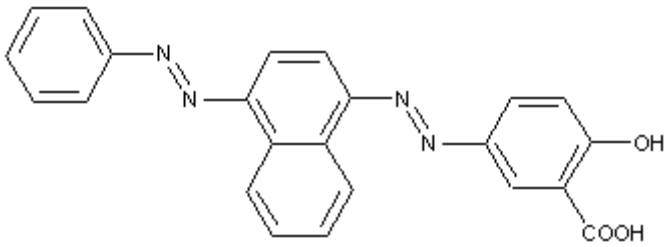
C09B 31/062

Phenols



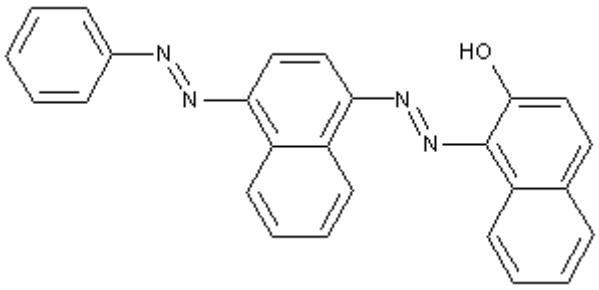
C09B 31/065

containing acid groups, e.g. -CO2H, -SO3H, -PO3H2, -OSO3H, -OPO2H2; Salts thereof



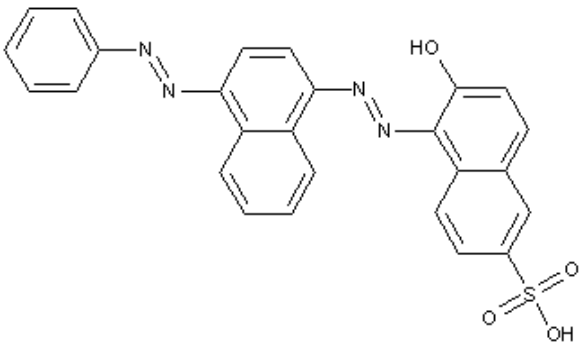
C09B 31/068

Naphthols



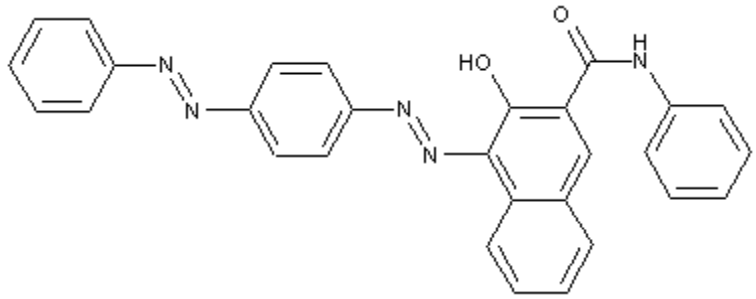
C09B 31/072

containing acid groups, e.g. -CO2H, -SO3H, -PO3H2, -OSO3H, -OPO2H2; Salts thereof



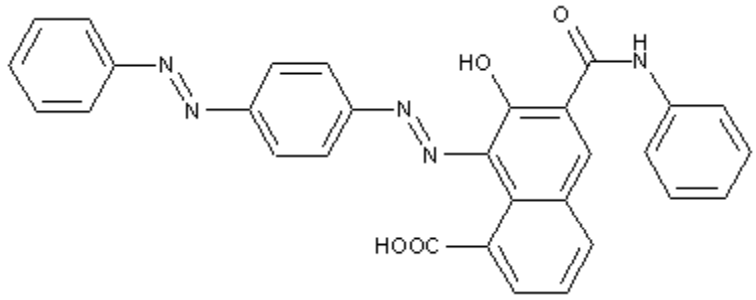
C09B 31/075

ortho-Hydroxy carboxylic acid amides



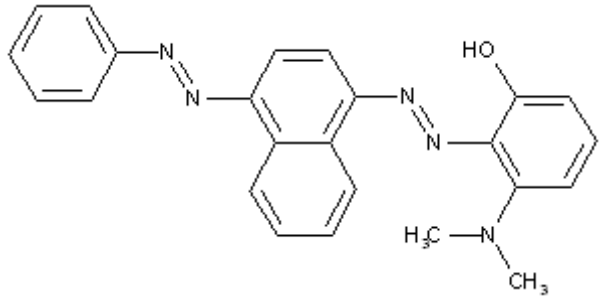
C09B 31/078

containing acid groups, e.g. -CO2H, -SO3H, -PO3H2, -OSO3H, -OPO2H2; Salts thereof



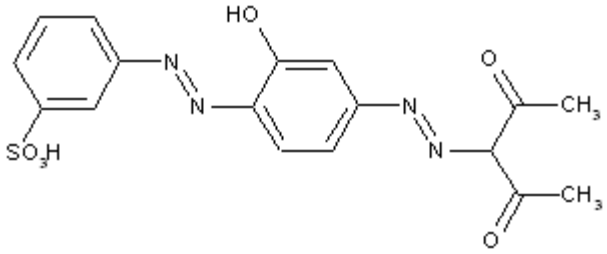
C09B 31/08

from a coupling component "C" containing directive hydroxyl and amino groups



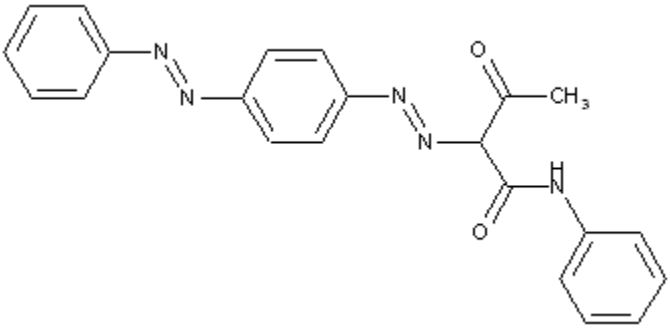
C09B 31/105

containing acid groups, e.g. -CO2H, -SO3H, -PO3H2, -OSO3H, -OPO2H2; Salts thereof



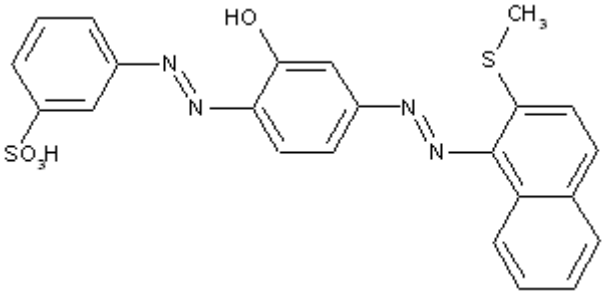
C09B 31/11

Aceto- or benzoyl-acetylarylides



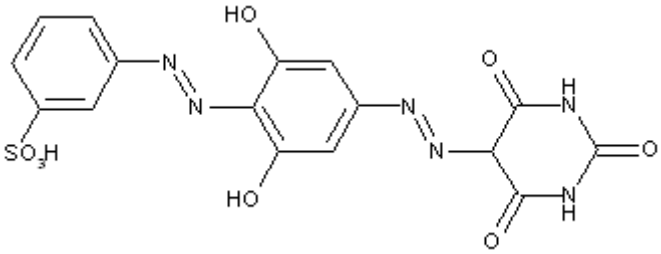
C09B 31/12

from other coupling components "C"



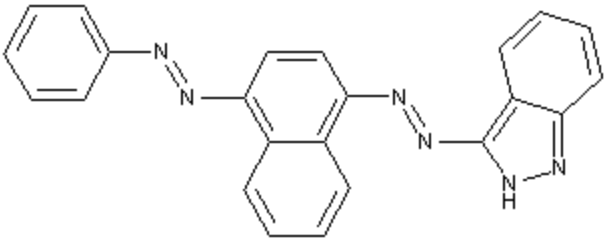
C09B 31/14

Heterocyclic components



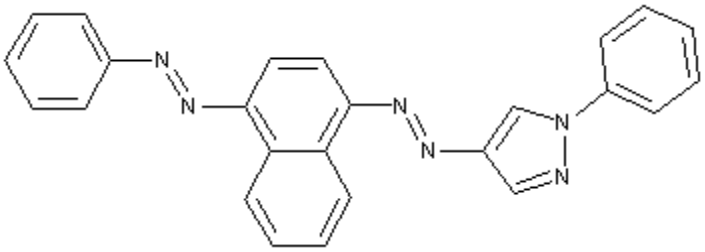
C09B 31/143

1,2-Diazoles



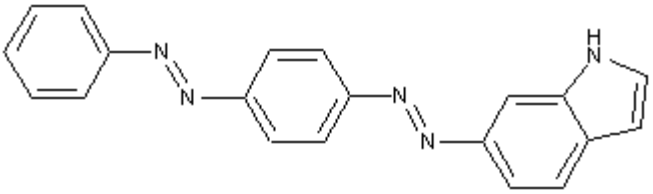
C09B 31/147

Pyrazoles



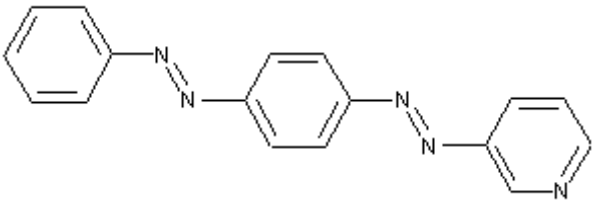
C09B 31/15

Indoles



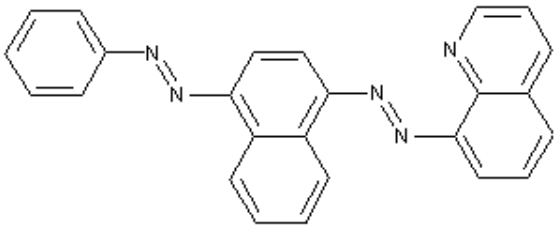
C09B 31/153

containing a six-membered ring with one nitrogen atom as the only ring hetero-atom



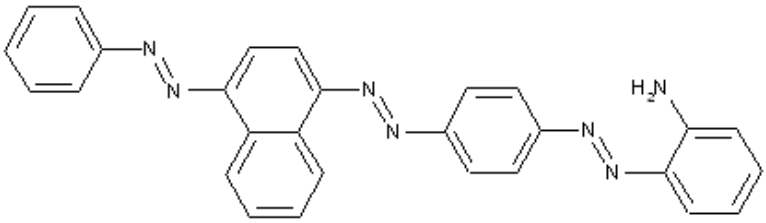
C09B 31/157

Quinolines or hydrogenated quinolines



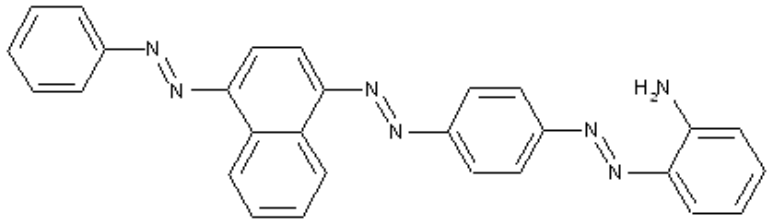
C09B 31/16

Trisazo dyes



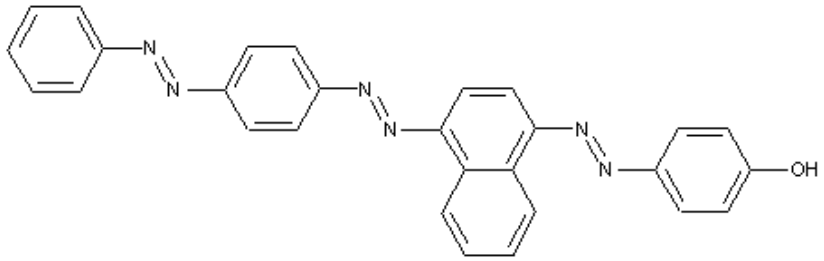
C09B 31/18

from a coupling component "D" containing a directive amine group



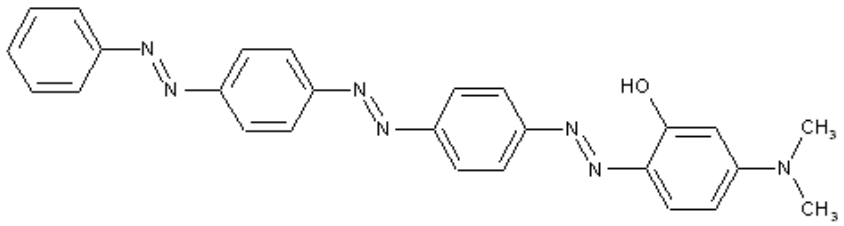
C09B 31/20

from a coupling component "D" containing a directive hydroxyl group



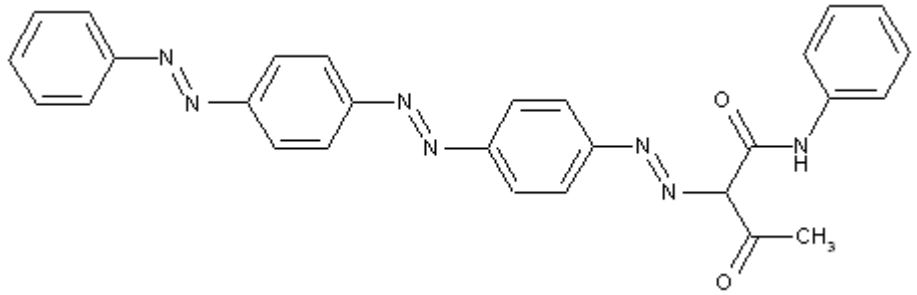
C09B 31/22

from a coupling component "D" containing directive hydroxyl and amino groups



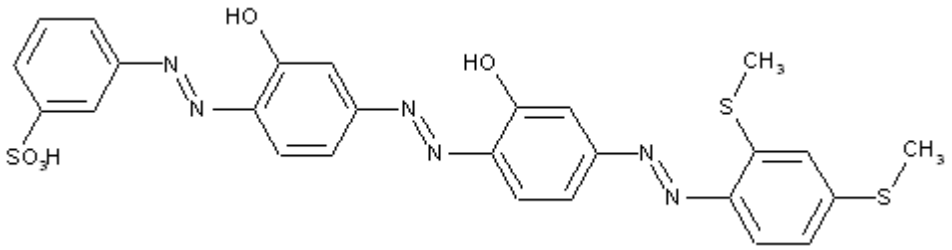
C09B 31/24

from a coupling component "D" containing reactive methylene groups



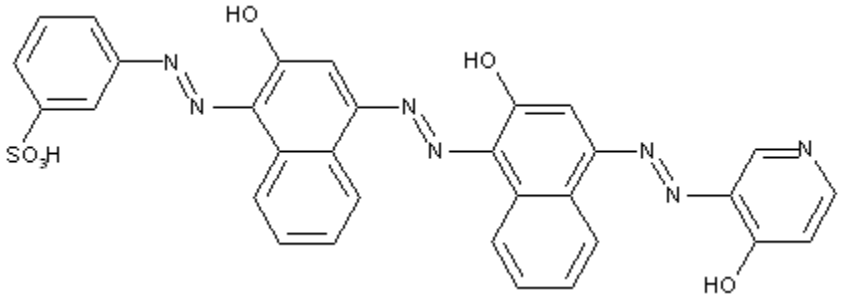
C09B 31/26

from other coupling components "D"



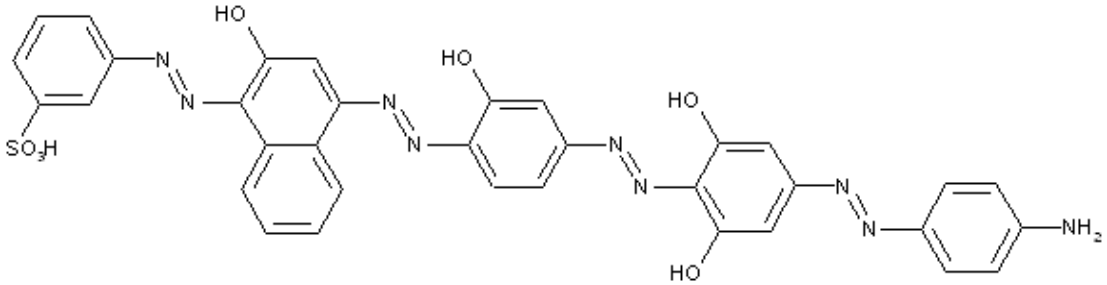
C09B 31/28

Heterocyclic compounds



C09B 31/30

Other polyazo dyes



C09B 33/00

Disazo and polyazo dyes of the types A->K<-B, A->B->K<-C, or the like, prepared by diazotising and coupling

Definition statement

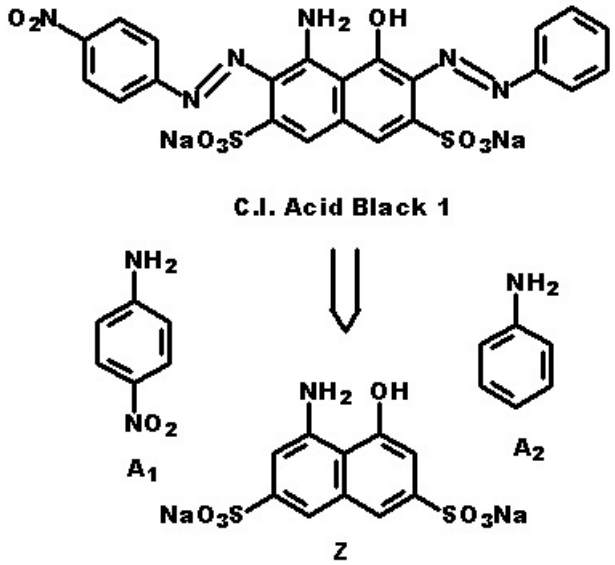
This place covers:

The arrows (->) indicate the coupling direction; in most cases the letter K represents the coupling component of the last step.

In case the "coupling direction" is not described in the document/application, both possible coupling directions should be classified.

In the following scheme one can derive the diazotising and coupling direction carried out by the synthesis of C.I. Acid Black 1. The two aniline derivatives A1 (= 4-nitro-aniline) and A2 (= aniline) are transferred to their diazo components by diazotising with sodium nitrite under acid conditions (e.g. with HCl). The obtained diazo components are then coupled in the 2- and 7- position of the amino-naphthol coupling component to give C.I. Acid Black 1.

This is a typical synthesis for a disazo dye falling under the reaction scheme A--->K<---B.



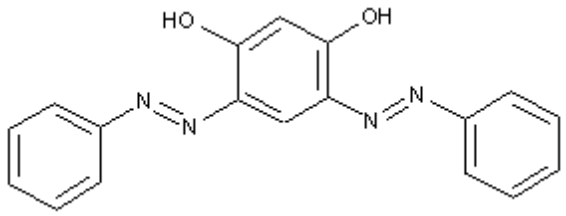
Special rules of classification

Note(s): In these main groups (Azo dyes C09B 29/00 - C09B 39/00) and related sub groups, arrows in the formulae of the various types of azo dyes indicate which part of an azo dye, prepared by diazotising and coupling, is derived from the diazo component and which part is derived from the coupling component. The arrow is pointing to the part derived from the coupling component.

Further details of subgroups:

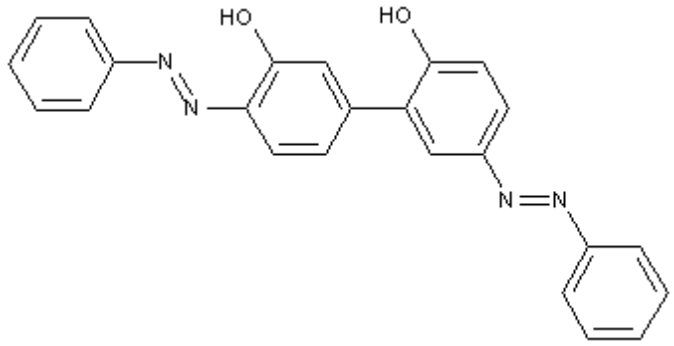
C09B 33/04

Disazo dyes in which the coupling component is a dihydroxy or polyhydroxy compound



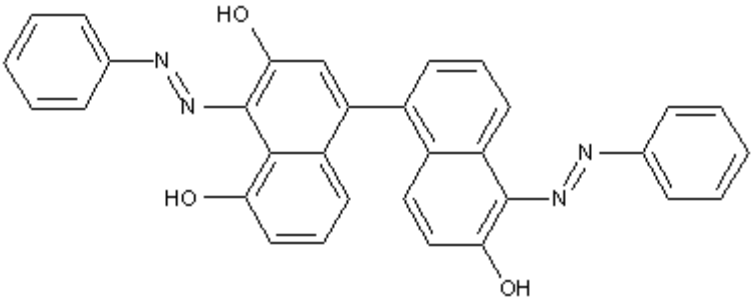
C09B 33/044

the coupling component being a bis-phenol



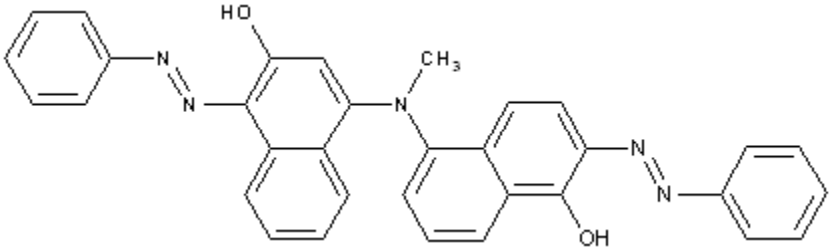
C09B 33/048

the coupling component being a bis-naphthol



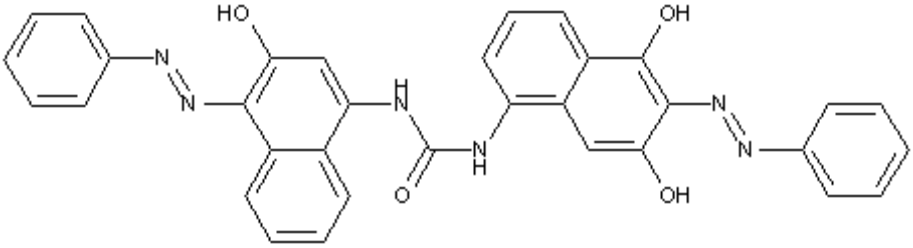
C09B 33/052

the coupling component being a bis-(naphthol-amine)



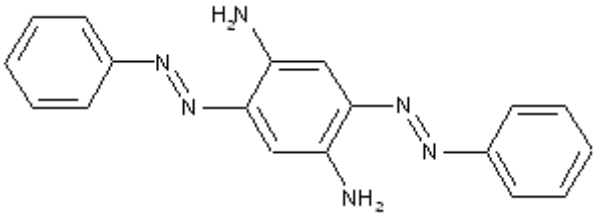
C09B 33/056

the coupling component being a bis-(naphthol-urea)



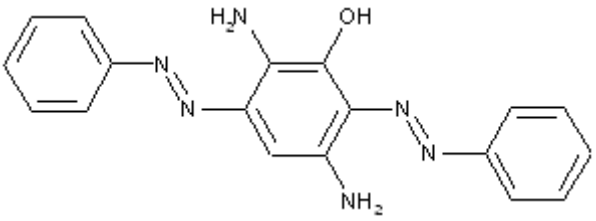
C09B 33/06

in which the coupling component is a diamine or polyamine



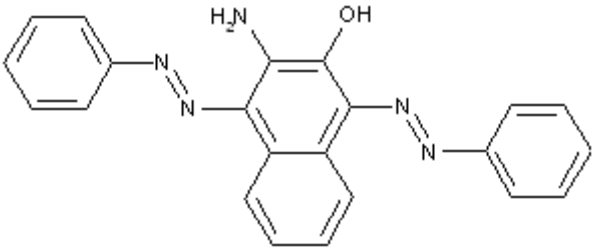
C09B 33/08

in which the coupling component is a hydroxy-amino compound



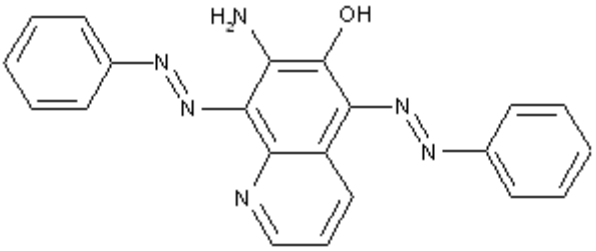
C09B 33/10

in which the coupling component is an amino naphthol



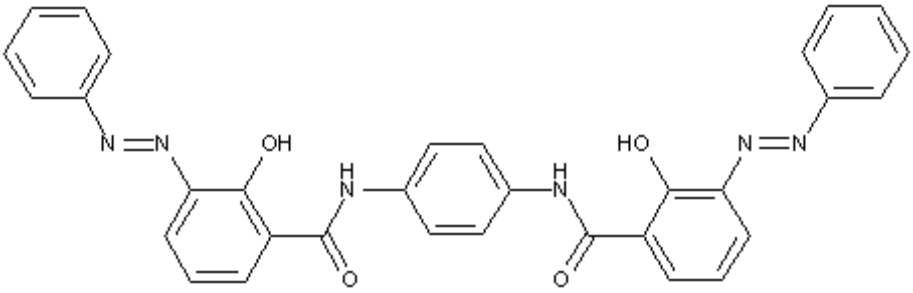
C09B 33/12

in which the coupling component is a hetero-cyclic compound



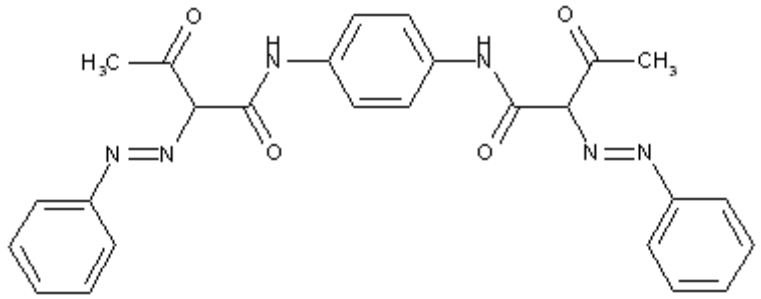
C09B 33/147

in which the coupling component is a bis -(-o-hydroxy-carboxylic- acid amide)



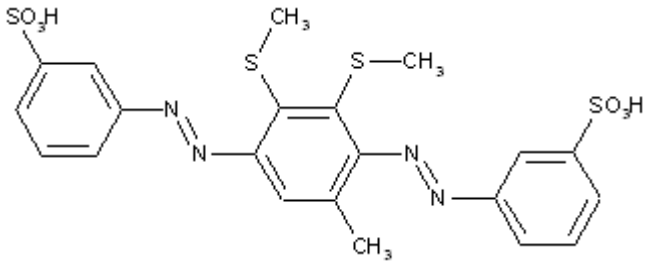
C09B 33/153

in which the coupling component is a bis-(aceto-acetyl amide) or a bis-(benzoyl-acetylamide)



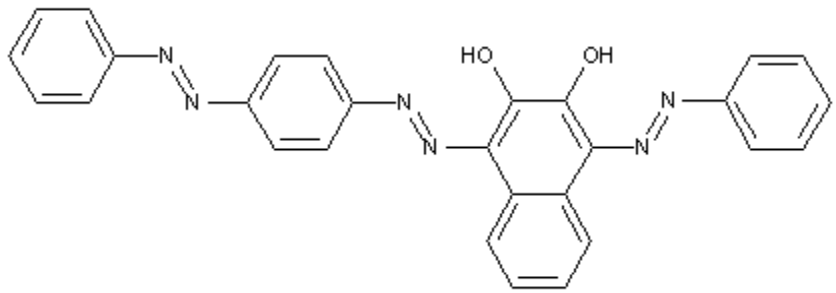
C09B 33/16

from other coupling components



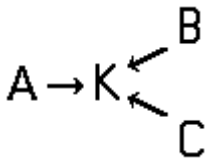
C09B 33/22

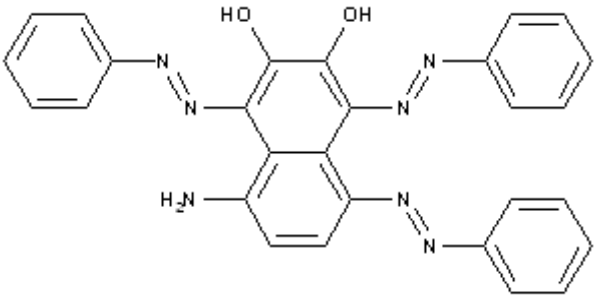
Trisazo dyes of the type A->B->K<-C



C09B 33/24

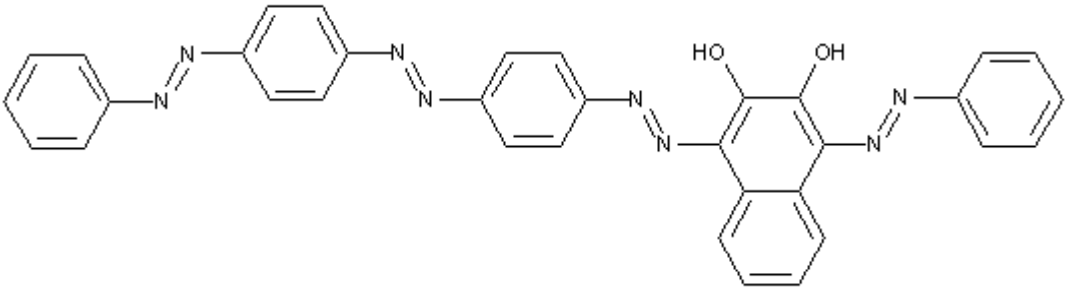
Trisazo dyes of the type;





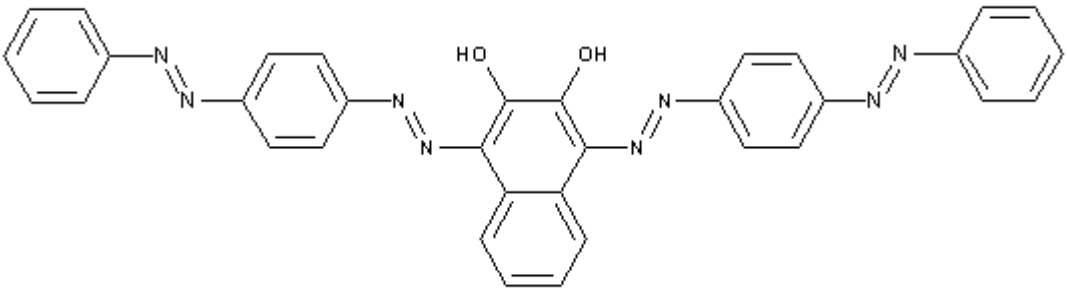
C09B 33/26

Tetrazo dyes of the type A->B->C->K-D



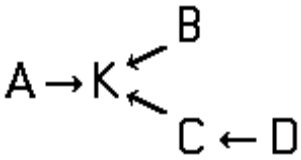
C09B 33/28

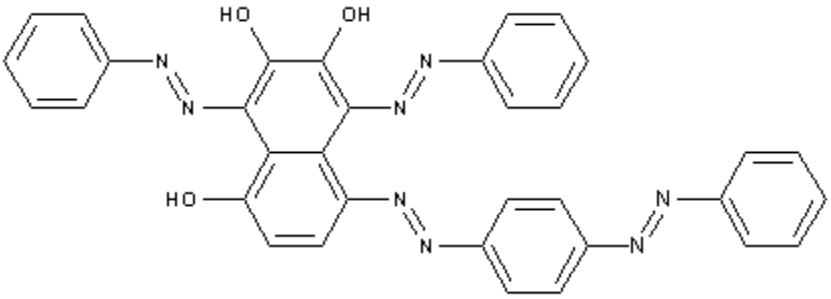
Tetrazo dyes of the type A →B →K ←C ←D



C09B 33/30

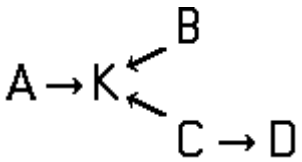
Tetrazo dyes of the type

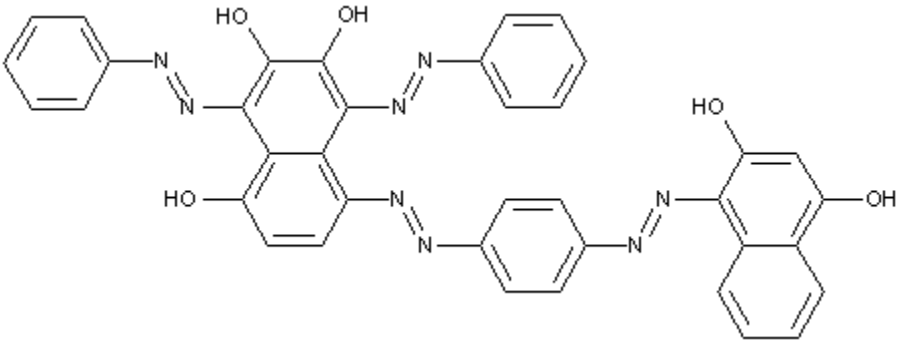




C09B 33/32

Tetrazo dyes of the type





C09B 35/00

Disazo and polyazo dyes of the type A<-D->B prepared by diazotising and coupling

Definition statement

This place covers:

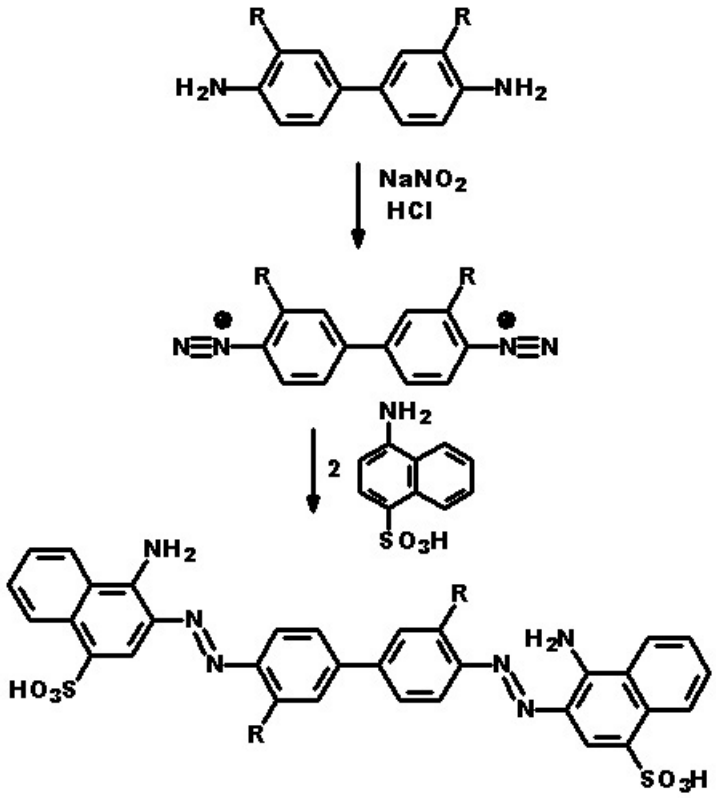
The arrows (->) indicate the coupling direction; in most cases the letter K represents the coupling component of the last step.

In case the "coupling direction" is not described in the document/application, both possible coupling directions should be classified.

In the following scheme one can derive the diazotising and coupling direction carried out by the synthesis of the disazo dye shown at the bottom of the scheme.

A 4,4'-diamino-biphenyl is twice diazotised, also called 'tetrazotised' with NaNO2 under acid conditions (e.g. HCl), thereby the two amino groups are transferred to two N2+ - groups at the left and at the right. This tetrazo compound is now coupled to two identical coupling components, namely 4-amino-naphthylsulfonic acid. The resulting disazo dye is finally obtained.

This is a typical synthesis for a disazo dye falling under the reaction scheme A<---D--->B.



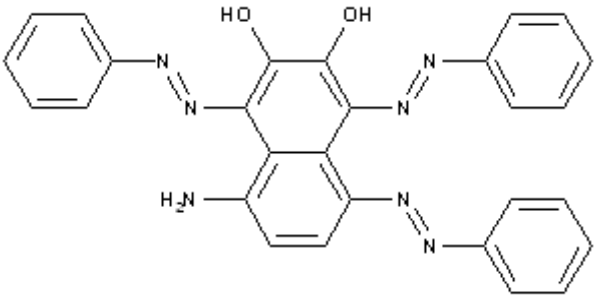
Special rules of classification

Note(s): In these main groups (Azo dyes C09B 29/00 - C09B 39/00) and related sub groups, arrows in the formulae of the various types of azo dyes indicate which part of an azo dye, prepared by diazotising and coupling, is derived from the diazo component and which part is derived from the coupling component. The arrow is pointing to the part derived from the coupling component.

Further details of subgroups:

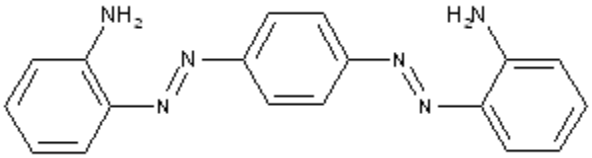
C09B 35/023

Disazo dyes characterised by two coupling components of the same type in which the coupling component is a hydroxy or polyhydroxy compound



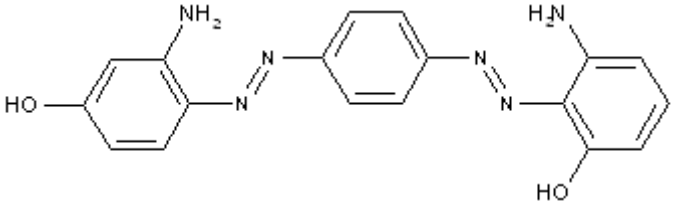
C09B 35/025

in which the coupling component is an amine or polyamine



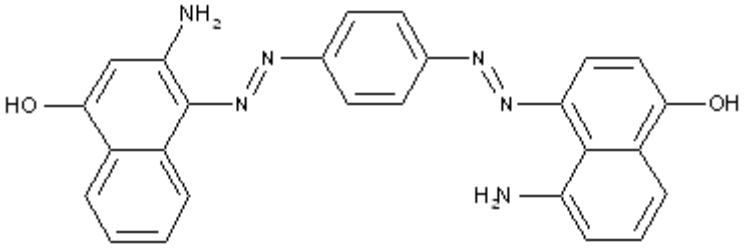
C09B 35/027

in which the coupling component is a hydroxy-amino compound



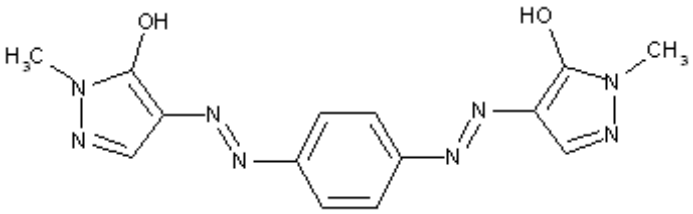
C09B 35/029

Amino naphtol



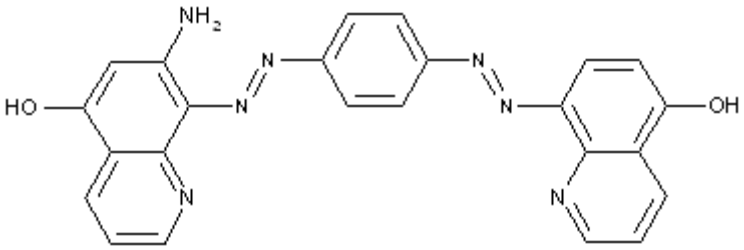
C09B 35/03

in which the coupling component is a heterocyclic compound



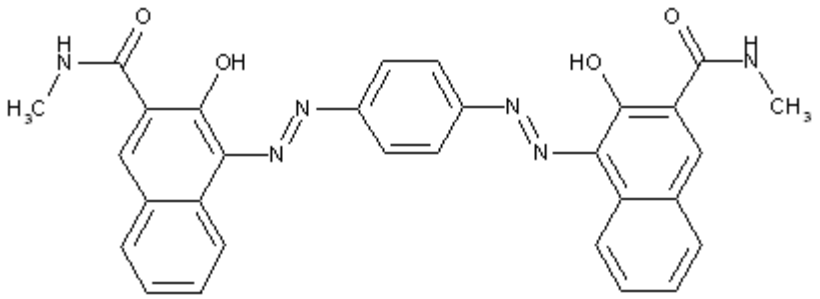
C09B 35/031

containing a six membered ring with one nitrogen atom as the only ring hetero atom



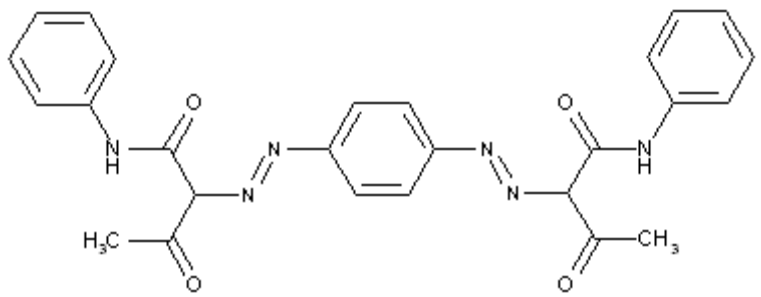
C09B 35/033

In which the coupling component is an arylamide of an o-hydroxy-carboxylic acid or of a beta-keto-carboxylic acid



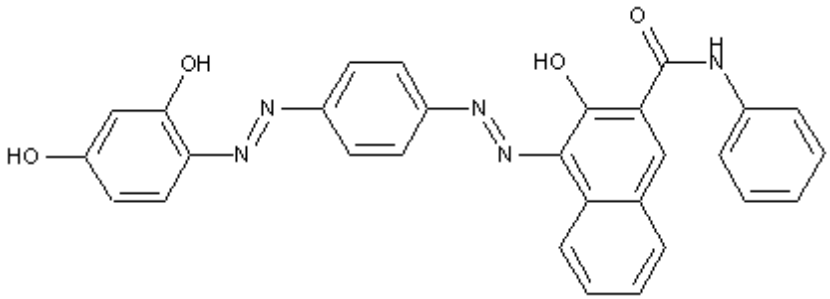
C09B 35/035

in which the coupling component containing an activated methylene group



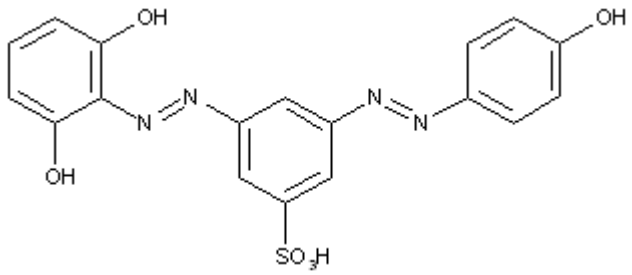
C09B 35/037

characterised by two coupling components of different types



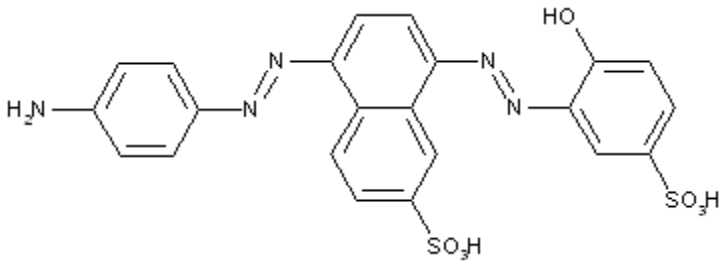
C09B 35/04

the tetrazo component being a benzene derivative



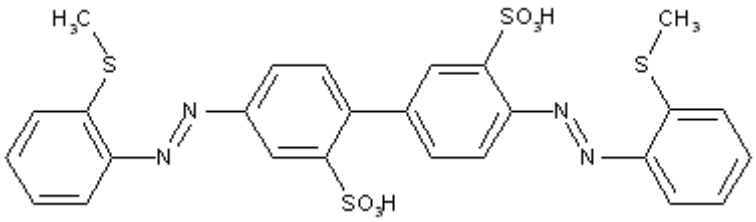
C09B 35/06

the tetrazo component being a naphthalene derivative



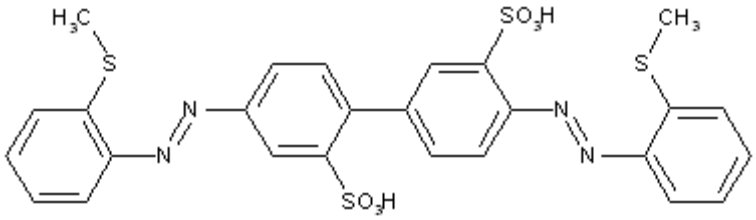
C09B 35/08

the tetrazo component being a derivative of biphenyl



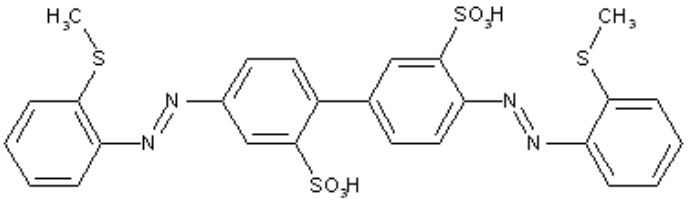
C09B 35/10

from two coupling components of the same type



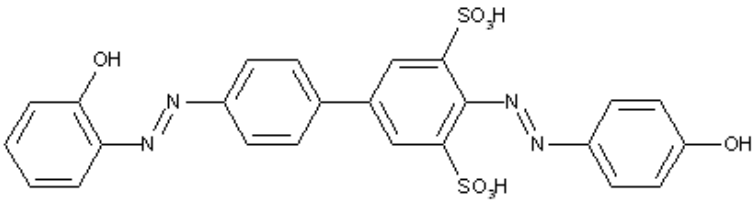
C09B 35/12

from amines



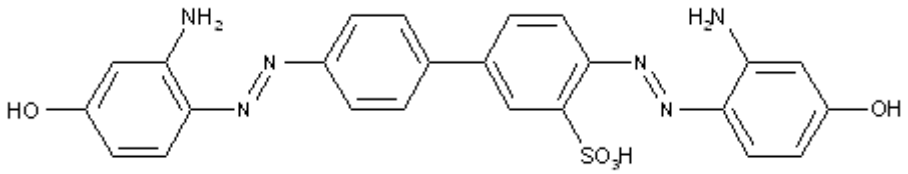
C09B 35/14

from hydroxy compounds



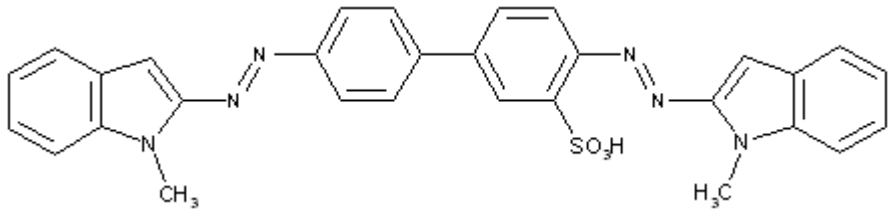
C09B 35/16

from hydroxy-amines



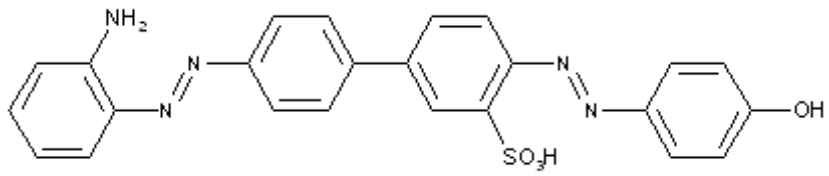
C09B 35/18

from heterocyclic compounds



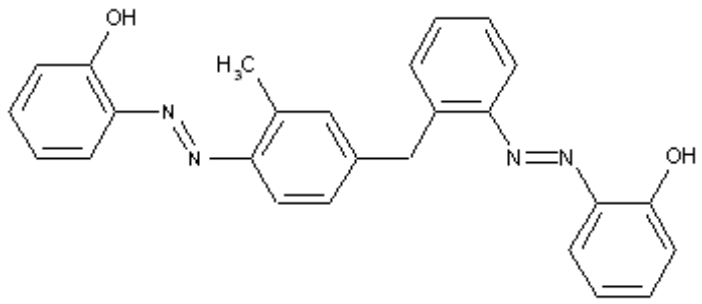
C09B 35/20

from two coupling compounds of different types



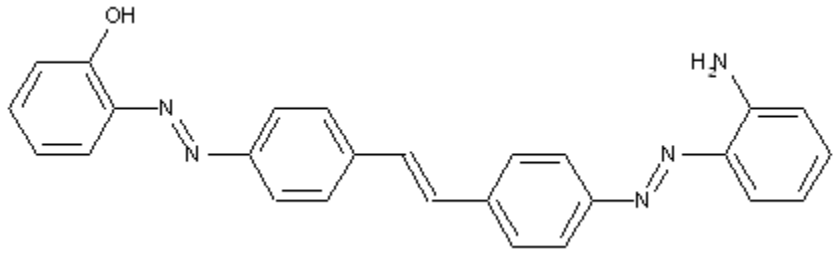
C09B 35/21

the tetrazo component being a derivative of diarylmethane or triarylmethane



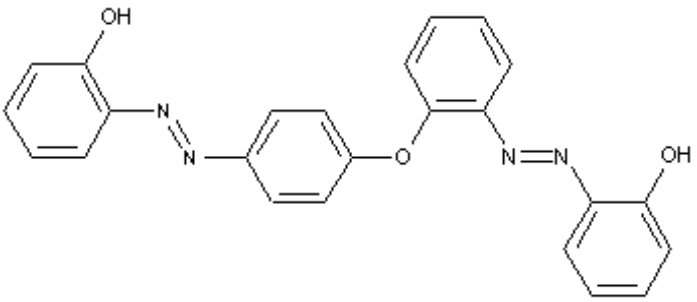
C09B 35/215

of diarylethane or diarylethene other stilbene-azo dyes, C09B 56/04, C09B 56/06



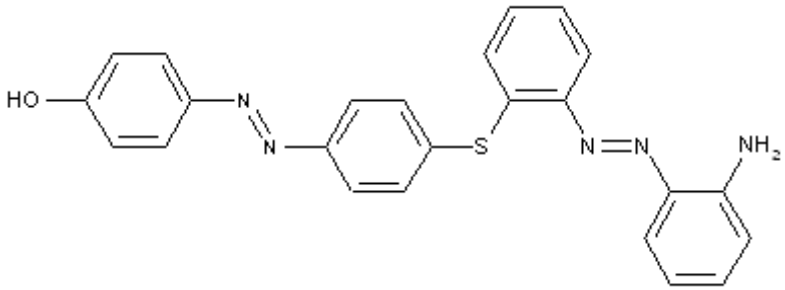
C09B 35/22

the tetrazo component being a derivative of a diaryl ether



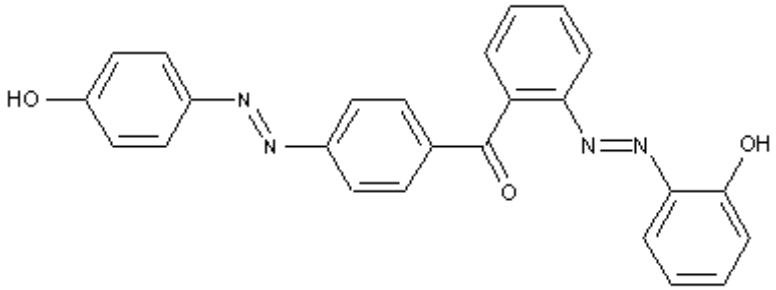
C09B 35/227

the tetrazo component being a derivative of a diaryl sulfide or a diaryl polysulfide



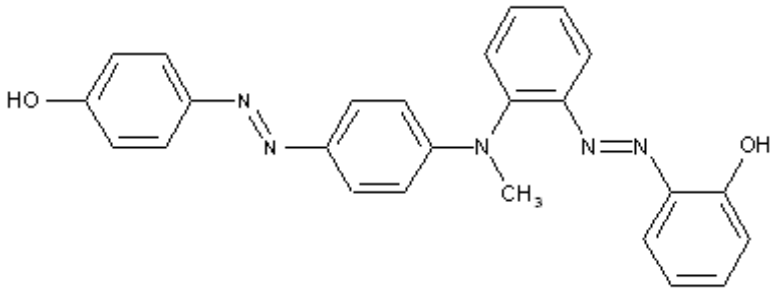
C09B 35/233

the tetrazo component being a derivative of a diaryl ketone or benzil



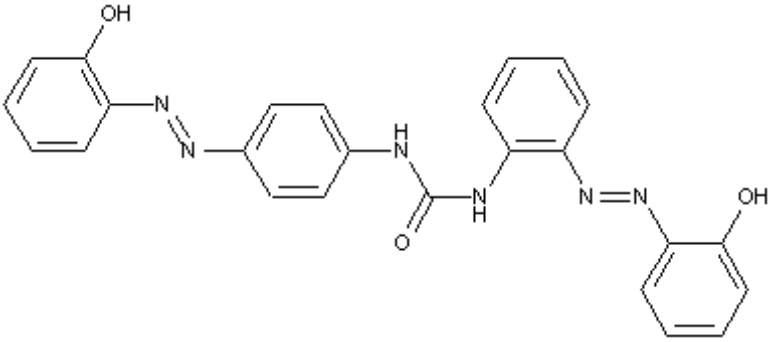
C09B 35/24

the tetrazo component being a derivative of a diaryl amine



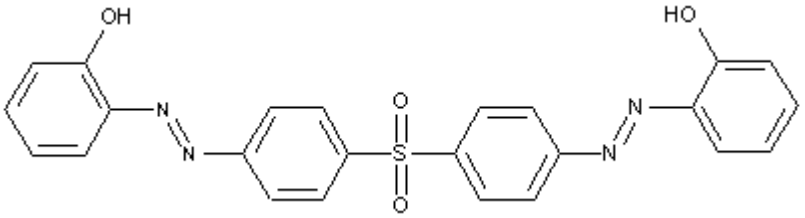
C09B 35/26

the tetrazo component being a derivative of a diaryl urea



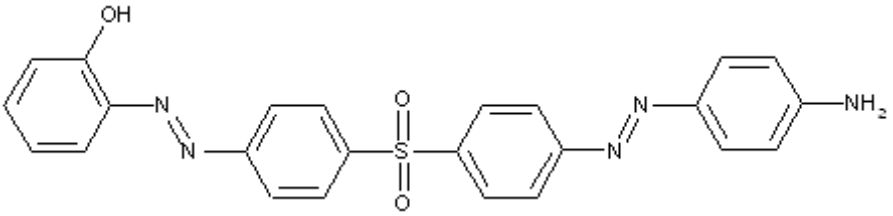
C09B 35/30

from two identical coupling components



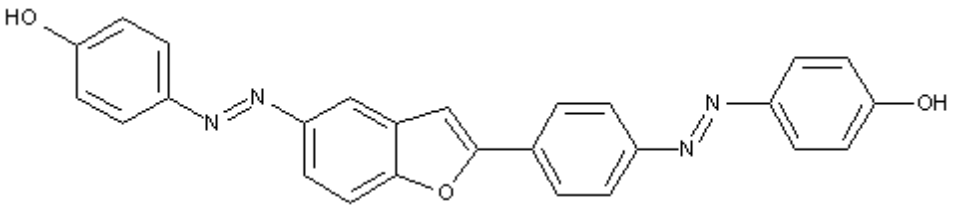
C09B 35/32

from two different coupling components



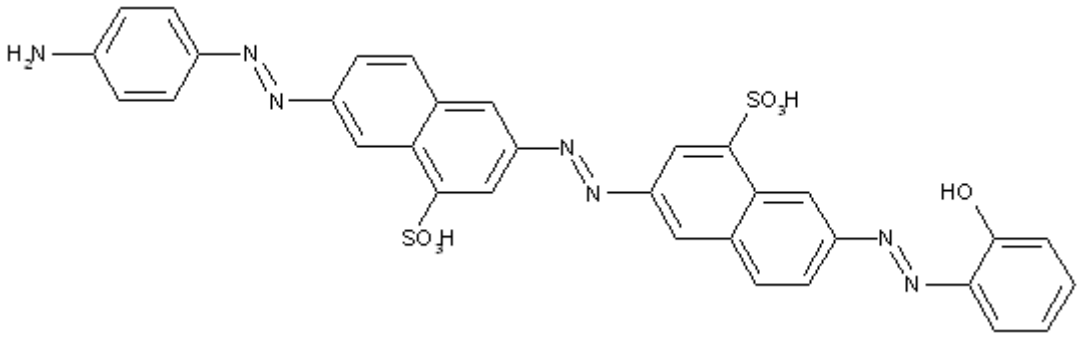
C09B 35/34

the tetrazo component being heterocyclic



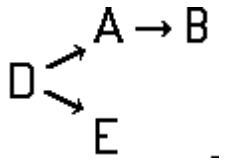
C09B 35/35

Trisazo dyes in which the tetrazo component is a diamino-azo-aryl compound



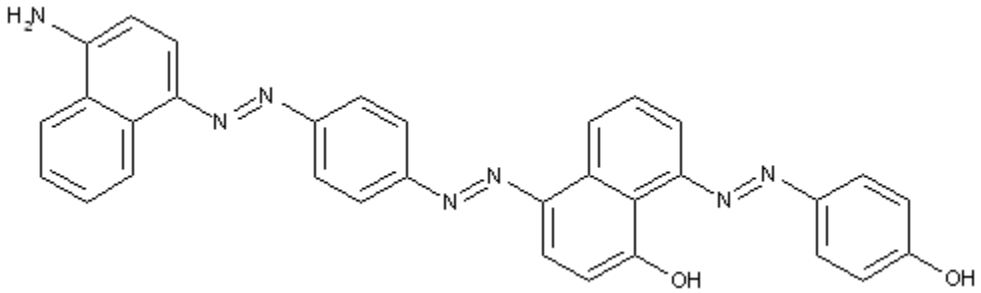
C09B 35/36

Trisazo dyes of the type



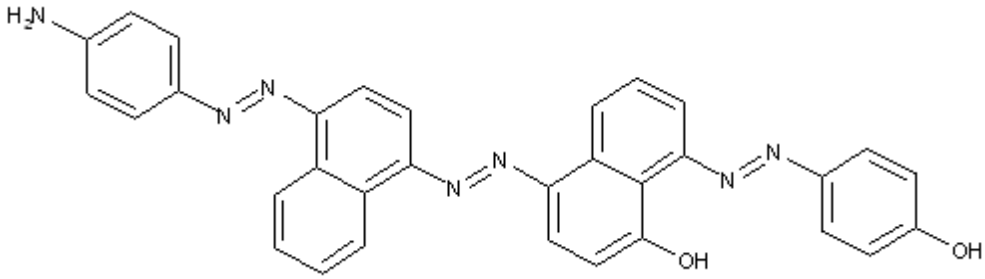
C09B 35/362

D is benzene



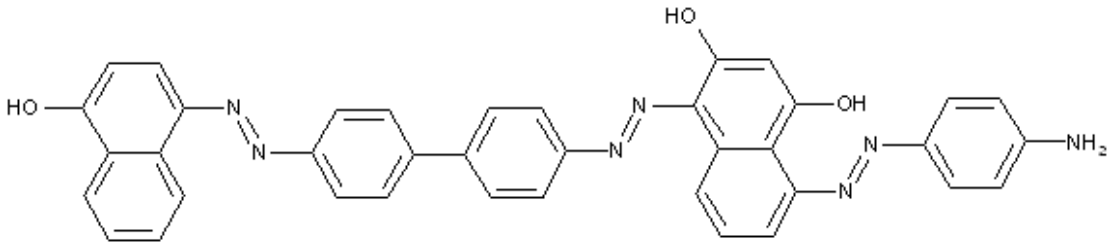
C09B 35/364

D is naphthalene



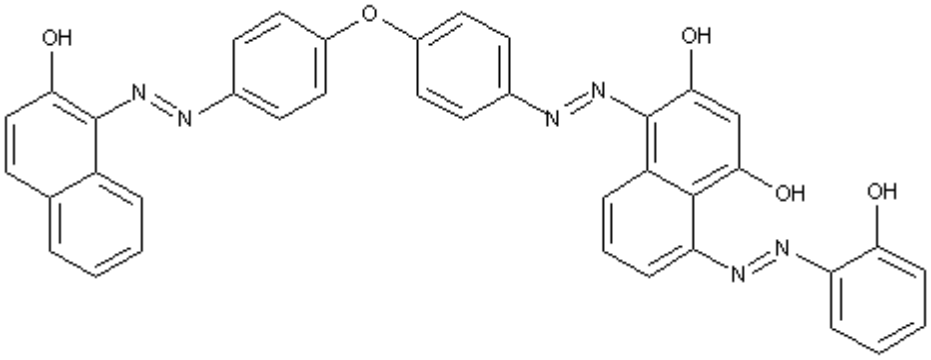
C09B 35/366

D is diphenyl



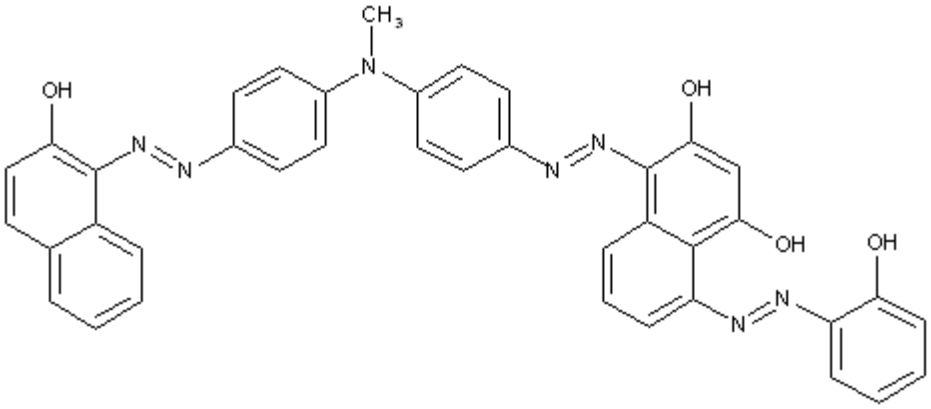
C09B 35/368

D is diarylether, a diarylsulfide or a diarylpolysulfide



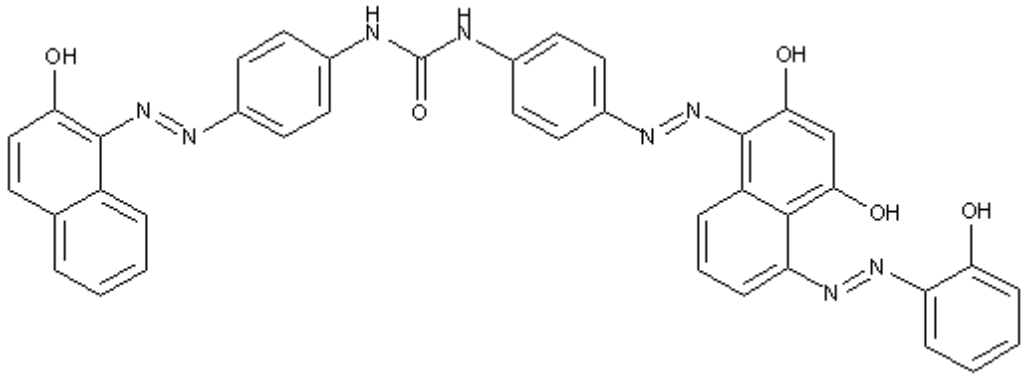
C09B 35/37

D is diarylamine



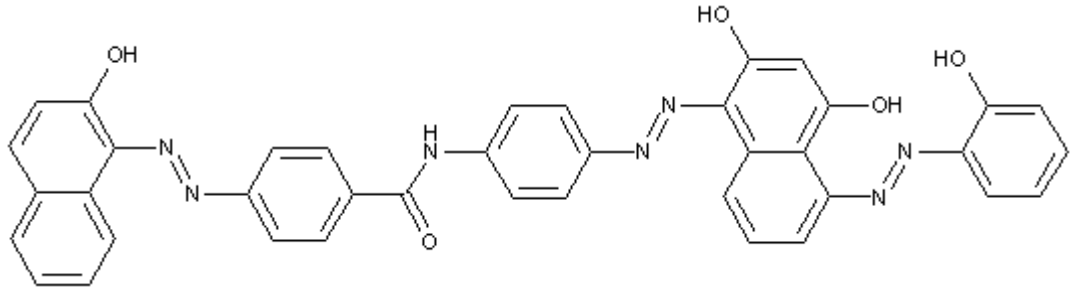
C09B 35/372

D is diarylurea



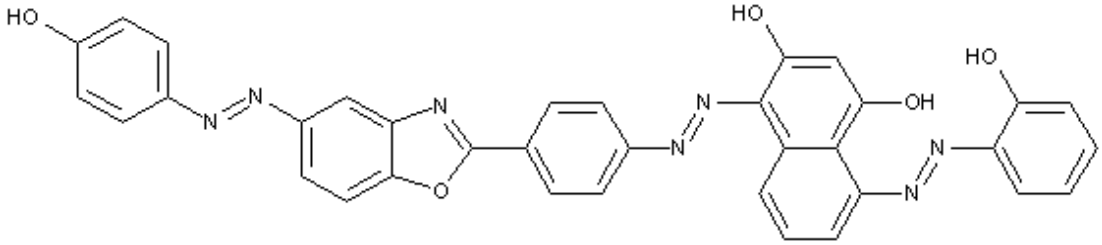
C09B 35/374

D contains two aryl nuclei linked by at least one of the groups -CON, -SO2N, -SO2-, or -SO2-O-



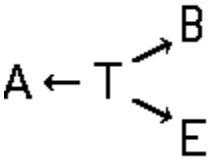
C09B 35/376

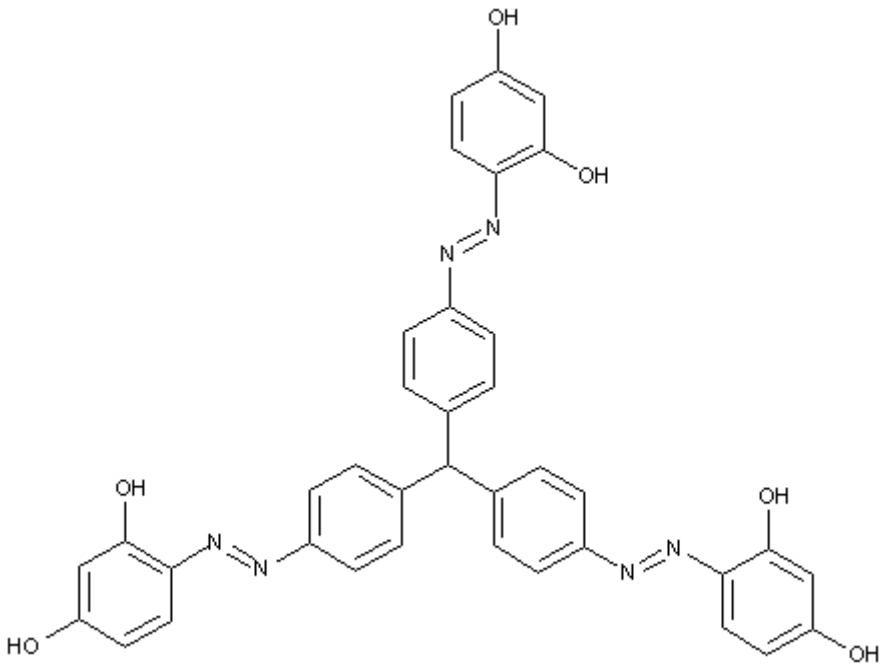
D is a heterocyclic compound



C09B 35/378

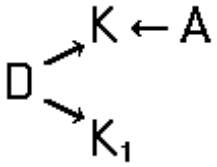
Trisazo dyes of the type

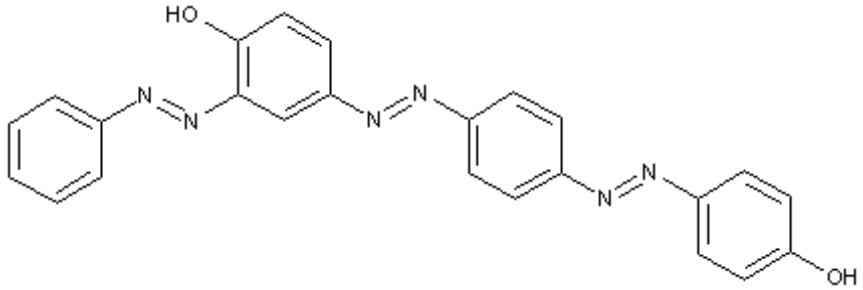




C09B 35/38

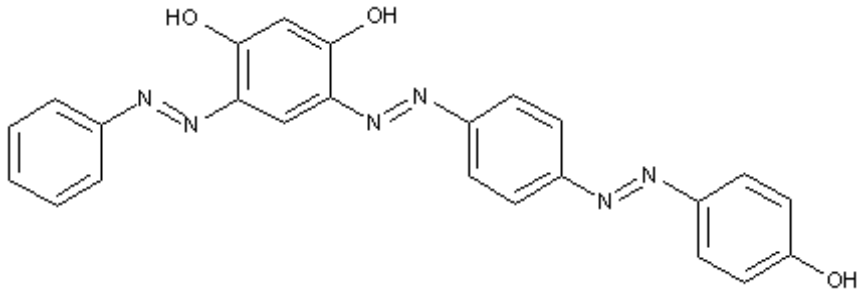
· Trisazo dyes ot the types





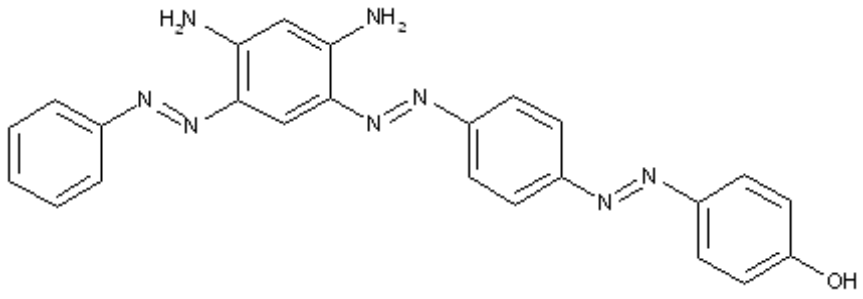
C09B 35/40

the component K being a dihydroxy or polyhydroxy compound



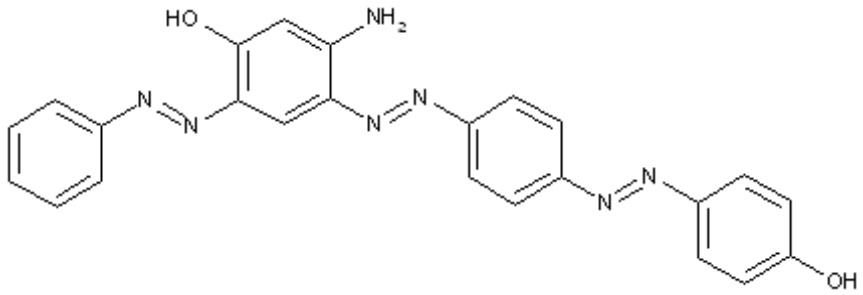
C09B 35/42

the component K being a diamine or polyamine



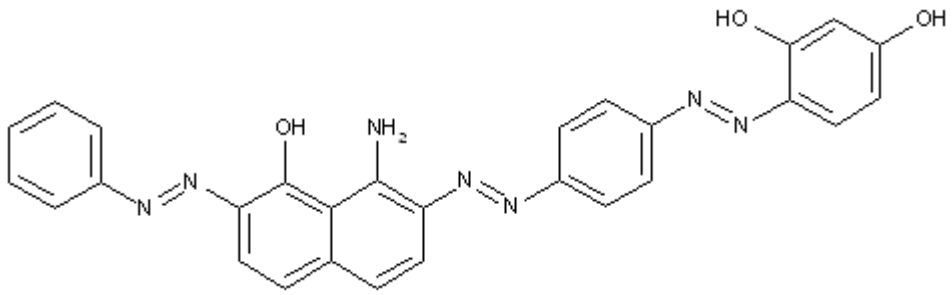
C09B 35/44

the component K being a hydroxy amine



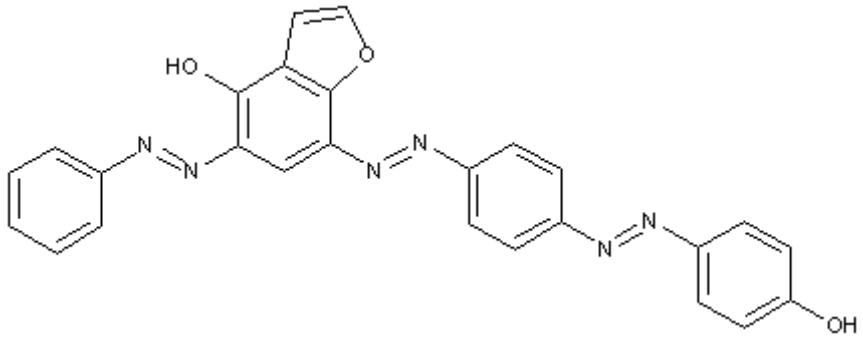
C09B 35/46

the component K being an amino naphthol



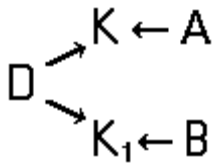
C09B 35/48

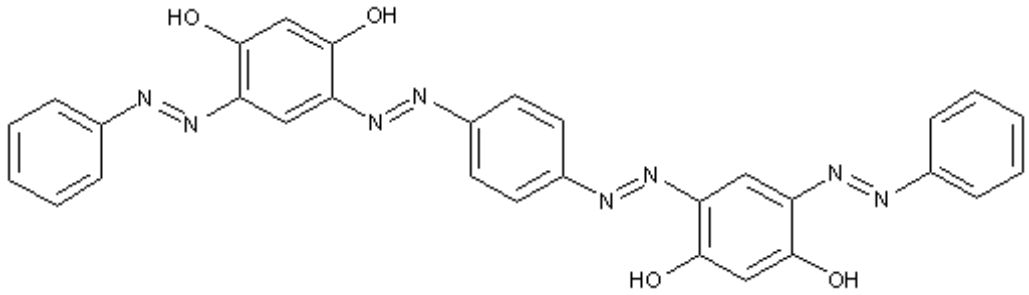
the component K being heterocyclic



C09B 35/52

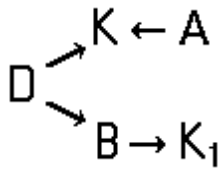
Tetrazo dyes of the type

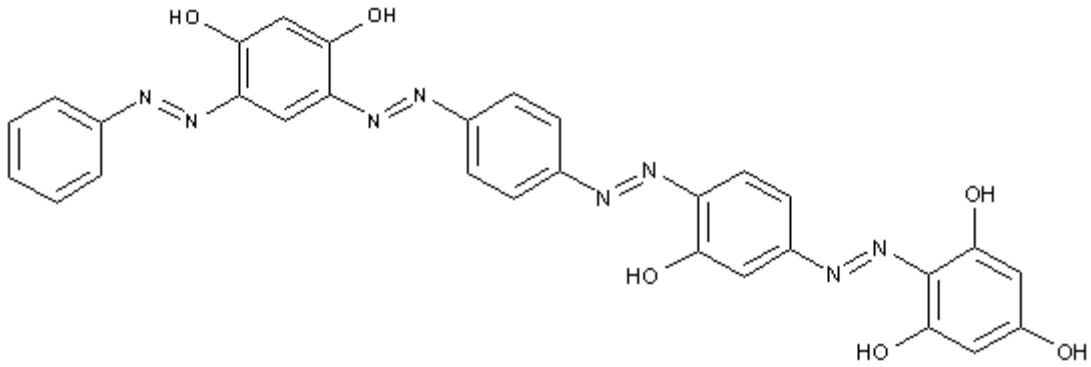




C09B 35/54

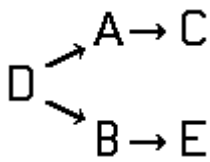
of the type

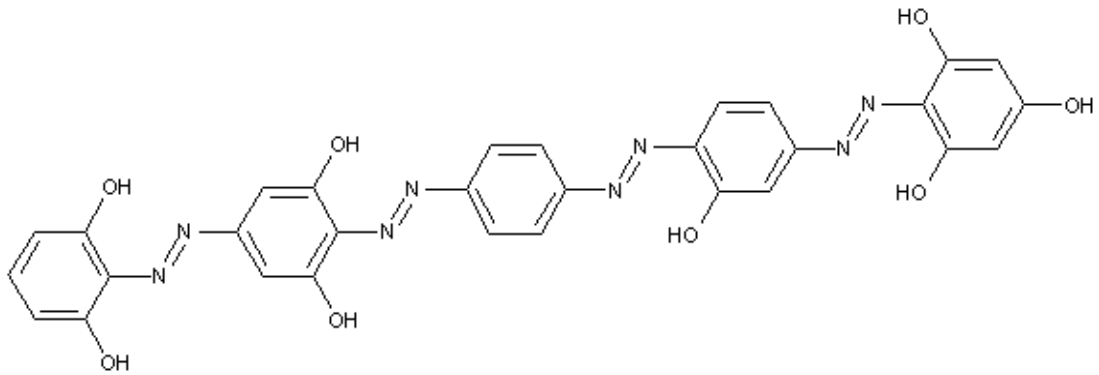




C09B 35/56

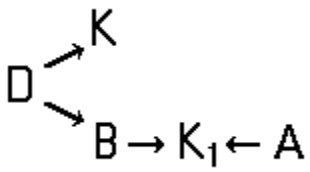
of the type

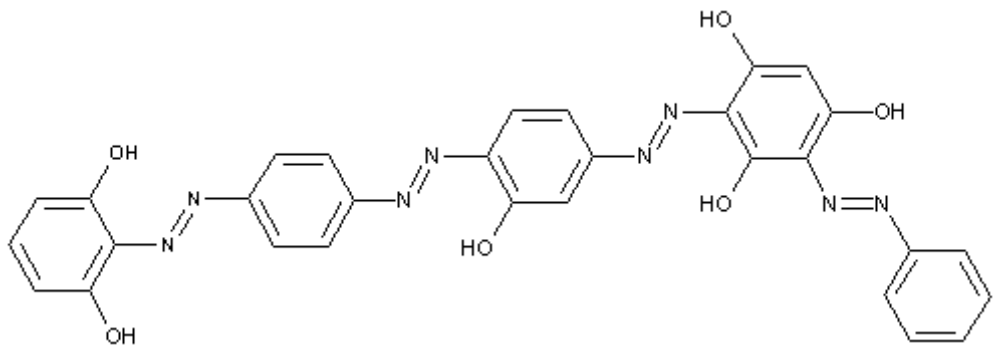




C09B 35/58

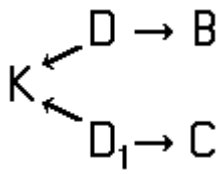
of the type

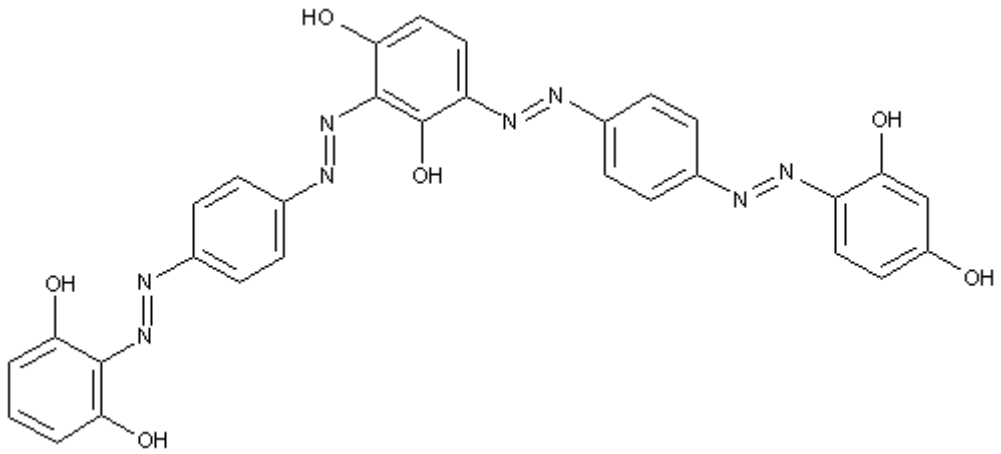




C09B 35/60

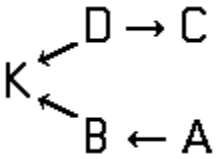
of the type

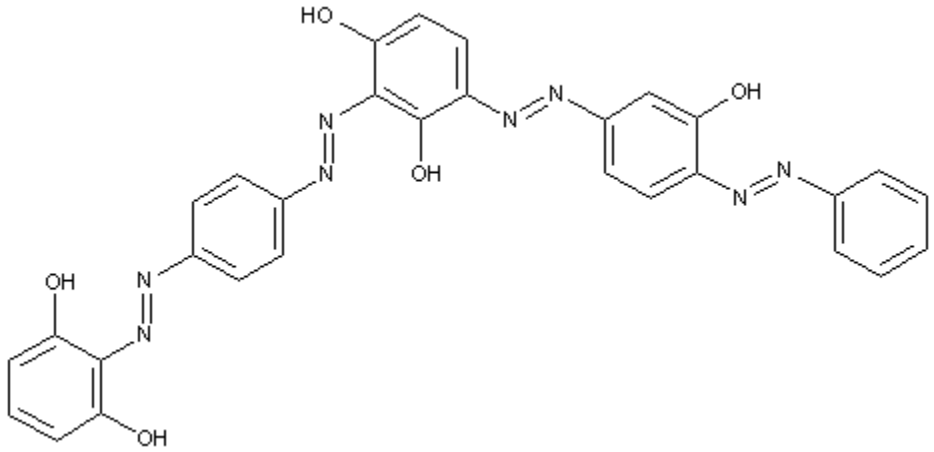




C09B 35/62

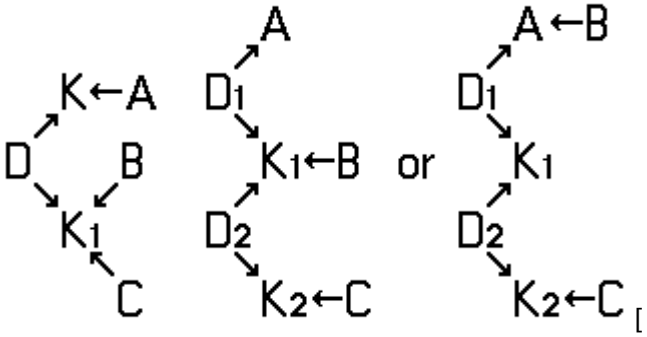
of the type

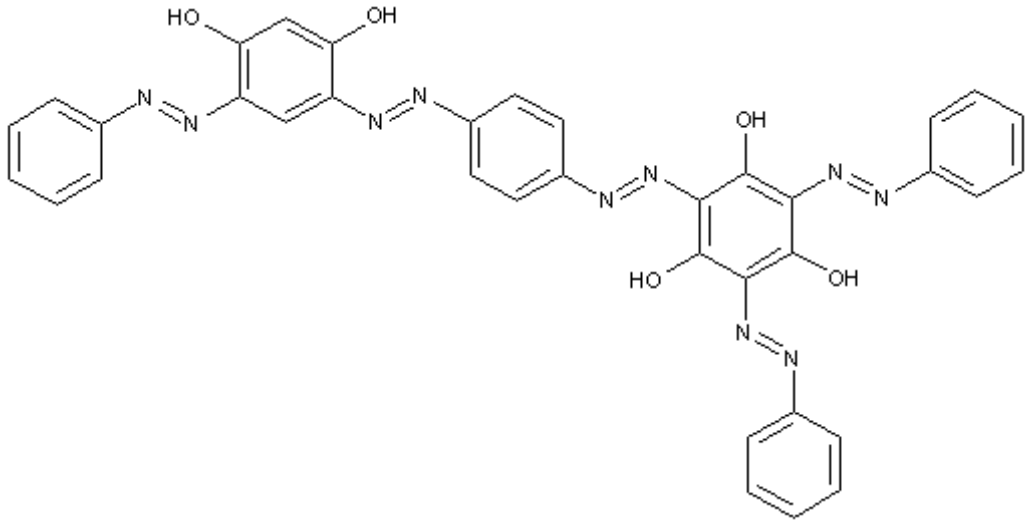




C09B 35/64

Higher polyazo dyes, e.g. of the types





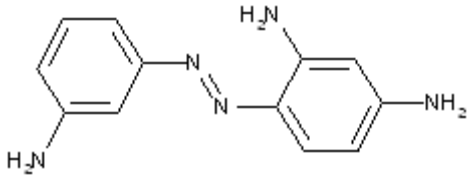
C09B 37/00

Azo dyes prepared by coupling the diazotised amine with itself

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



Special rules of classification

Note(s): In these main groups (Azo dyes C09B 29/00 - C09B 39/00) and related sub groups, arrows in the formulae of the various types of azo dyes indicate which part of an azo dye, prepared by diazotising and coupling, is derived from the diazo component and which part is derived from the coupling component. The arrow is pointing to the part derived from the coupling component.

C09B 39/00

Other azo dyes prepared by diazotising and coupling

Definition statement

This place covers:

Generally documents disclosing dyes which can not be classified in the foregoing groups C09B 29/00 through C09B 37/00.

For instance the reaction product of at least one diazonium salt with a carbon black will be introduced in C09B 39/00 (here a diazo compound is coupled on the solid surface of a carbon black particle); as an other example, obtaining tanning dyestuffs by coupling a diazotised aromatic compound with a water-soluble tanning agent and reacting the product with a heavy-metal salt is classified here as well; [further illustrations can be derived from documents present in this group].

Special rules of classification

Note(s): In these main groups (Azo dyes C09B 29/00 - C09B 39/00) and related sub groups, arrows in the formulae of the various types of azo dyes indicate which part of an azo dye, prepared by diazotising and coupling, is derived from the diazo component and which part is derived from the coupling component. The arrow is pointing to the part derived from the coupling component.

C09B 41/00

Special methods of performing the coupling reaction {(reaction of mixtures of diazo and coupling components, C09B 67/0033)}

Definition statement

This place covers:

Coupling reactions e.g. carried out in specific solvents, in the presence of specific reaction assistants [e.g. urea, dispersing agents etc.]; automatically controlled processes, stepwise coupling, the help of mechanical resp. physical means are covered here as well.

C09B 43/00

Preparation of azo dyes from other azo compounds

Definition statement

This place covers:

Here the azo dye as produced is generally included already basically in the starting product; e.g. functional groups attached in the starting dye could be transfered into other functional groups leading to the final product [acylation of amino groups, acylation of hydroxyl groups etc.].

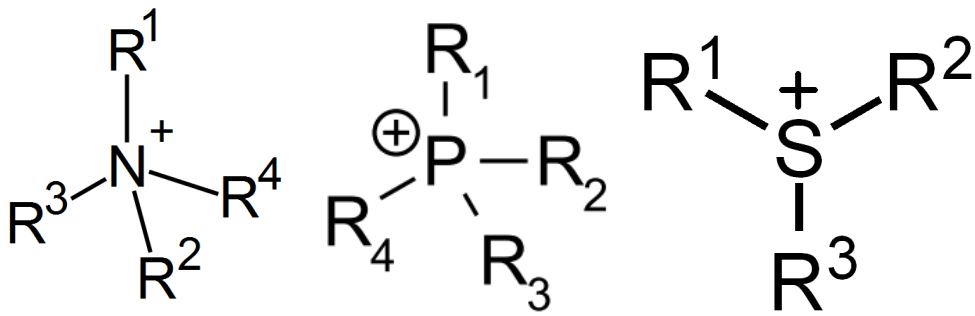
C09B 44/00

Azo dyes containing onium groups

Definition statement

This place covers:

To the dye e.g. ammonium, phosphonium, sulfonium or other 'onium' groups (see examples below) are covalently attached:



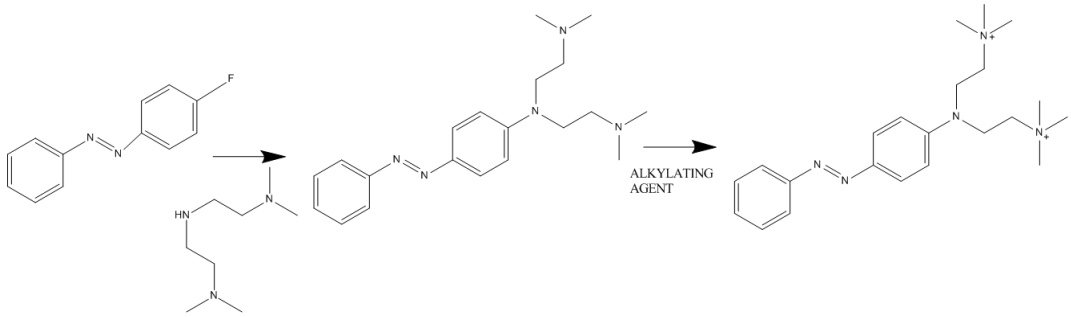
Special rules of classification

Further details of subgroups:

C09B 44/005

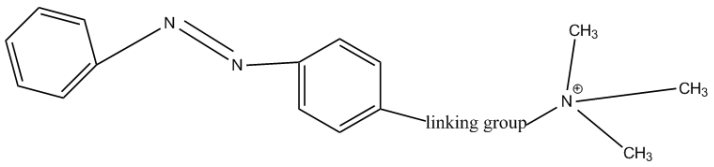
Special process features in the quaternization reaction

e.g. by treating an aromatic heterocycle which contains at least one nitrogen atom with an alkylating agent or e.g. by treating a benzothiazole azo compound with a dilakylsulfate or by a reaction below:



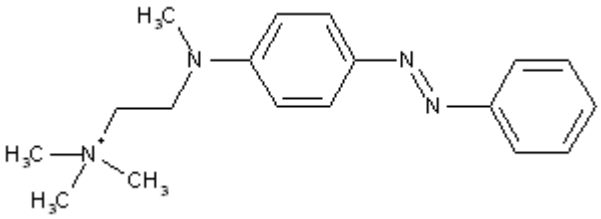
C09B 44/02

containing ammonium groups not directly attached to an azo group



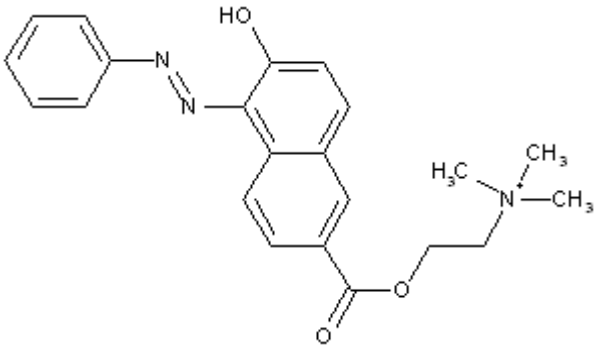
C09B 44/04

from coupling components containing amino as the only directing group



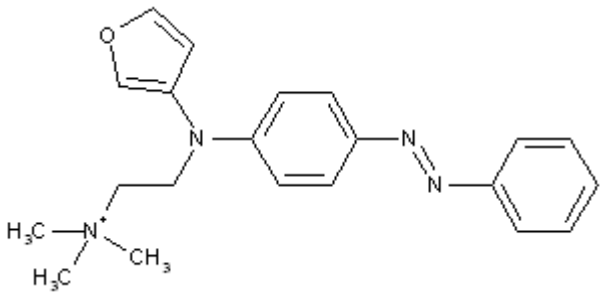
C09B 44/06

from coupling components containing hydroxyl as the only directing group



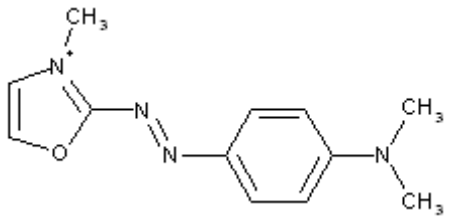
C09B 44/08

from coupling components containing heterocyclic rings



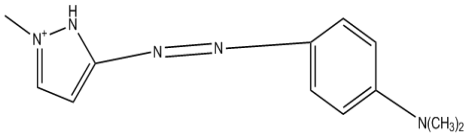
C09B 44/10

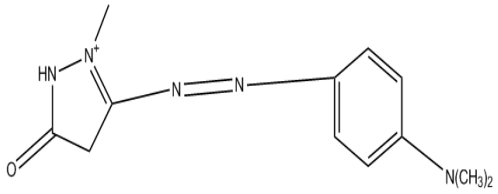
containing cyclammonium groups attached to an azo group by a carbon atom of the ring system



C09B 44/106

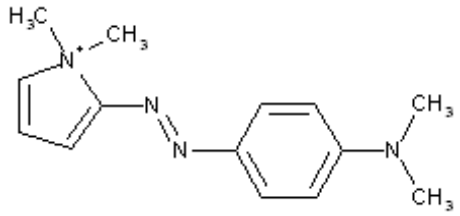
derived from pyrazoles (left), pyrazolones (right)





C09B 44/12

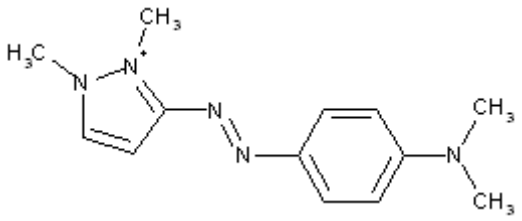
having one nitrogen atom as the only ring hetero atom



C09B 44/14

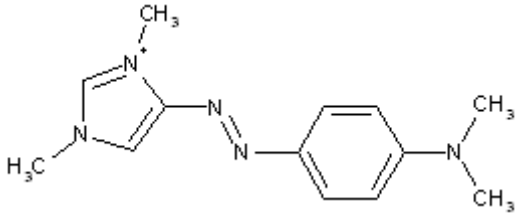
1, 2-Diazoles or hydrogenated 1 ,2-diazoles Pyrazolium; Indazolium

3-Diazoles



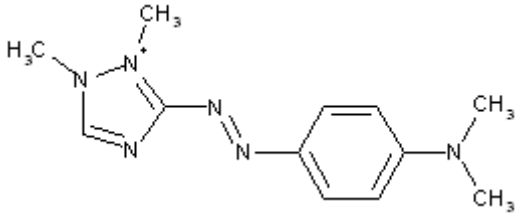
C09B 44/16

1, 3-Diazoles or hydrogenated 1,3-diazoles (Benz)imidazolium



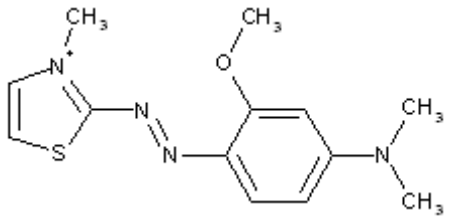
C09B 44/18

having three nitrogen atoms as the only ring hetero atoms



C09B 44/20

Thiazoles or hydrogenated thiazoles



C09B 45/00

Complex metal compounds of azo dyes

Definition statement

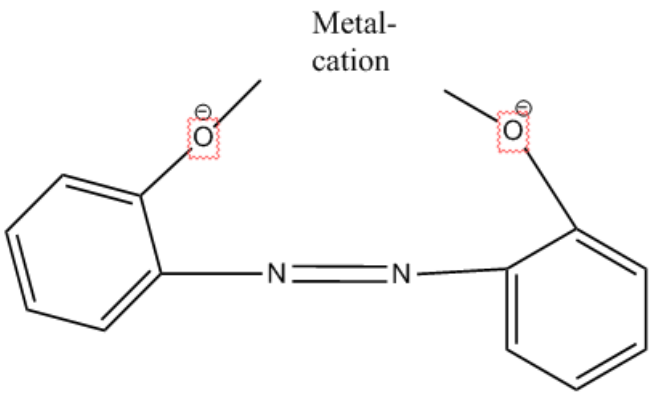
This place covers:

Here the azo dye functions as a ligand linked to a metal cation in a coordinative nature. Thereby the electron donating group in the dye can be the azo group, a hydroxyl group or an acid group (e.g. COO-) etc.

Special rules of classification

The sub-groups C09B 45/04, C09B 45/14 and C09B 45/24 cover documents where the metal can vary, in this case don't use the respective lower sub-groups (e.g. C09B 45/06, C09B 45/08, C09B 45/10). The sub-groups C09B 45/12, C09B 45/22 and C09B 45/32 should contain documents where the metal is not Cr, Cu or Co, i.e. for example Ni or Fe (maybe both together also).

A typical monoazo dye-metal complex is shown below:



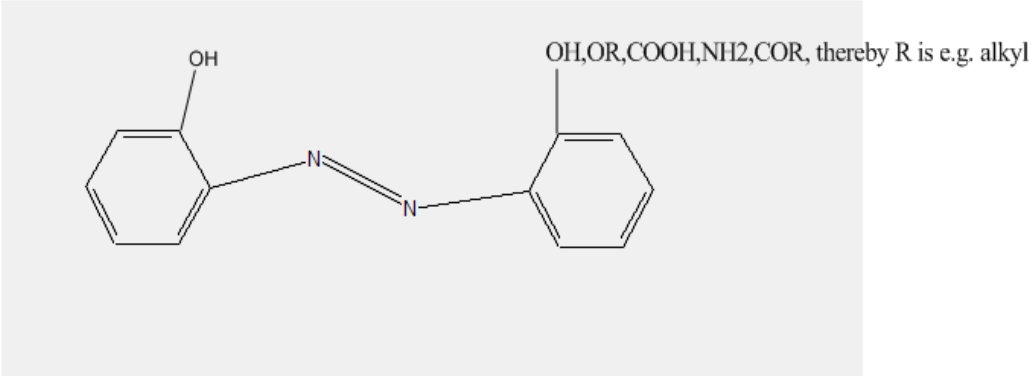
Further details of subgroups:

C09B 45/01

Preparationfromdyescontainingino-postionahydroxylgroupandino'-position hydroxyl, alkoxy, carboxyl, amino or keto groups

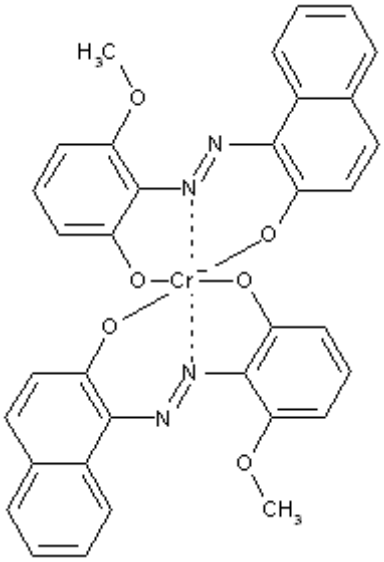
C09B 45/02

[e.g. the dye below could be a possible ligand for metallisation]



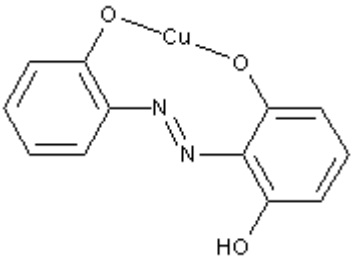
C09B 45/16

containing chromium



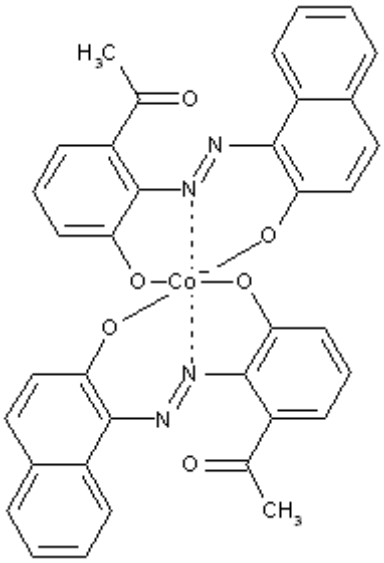
C09B 45/18

containing copper



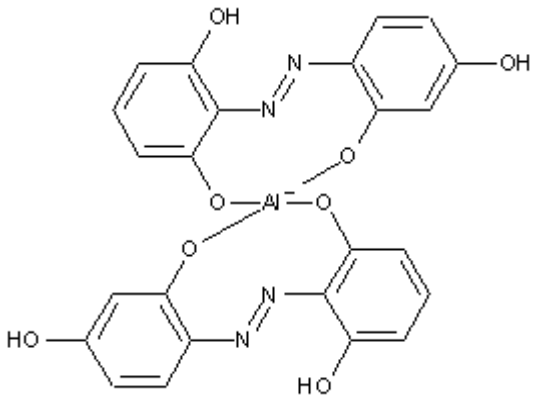
C09B 45/20

containing cobalt



C09B 45/22

containing other metals

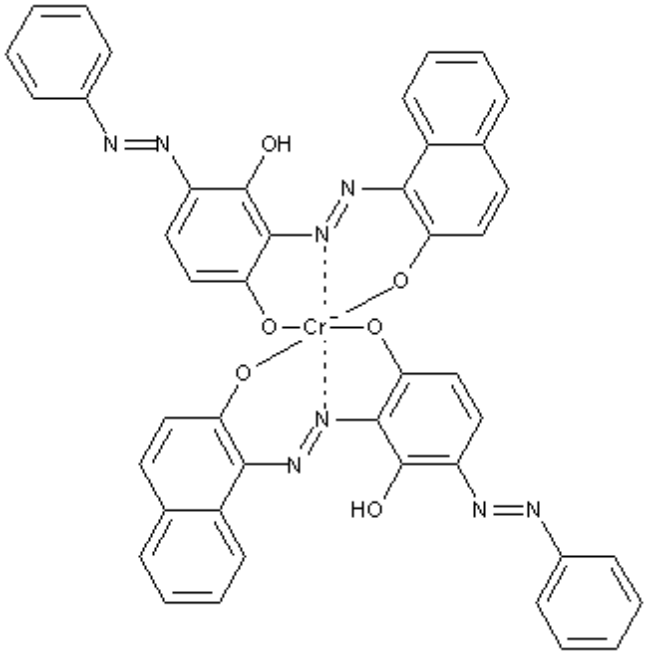


C09B 45/24

Disazo or poly azo compounds

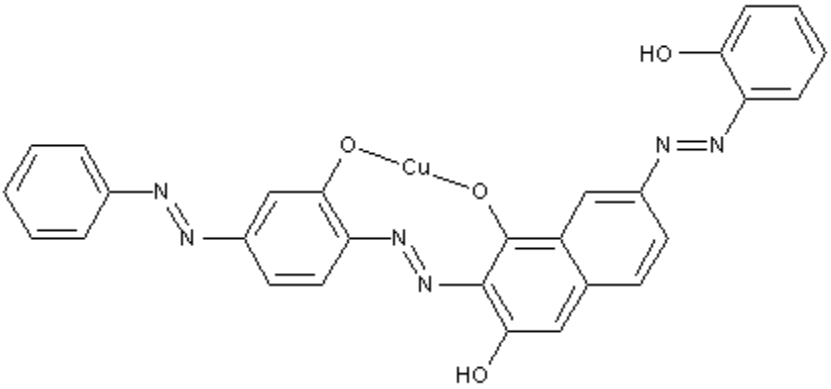
C09B 45/26

containing chromium



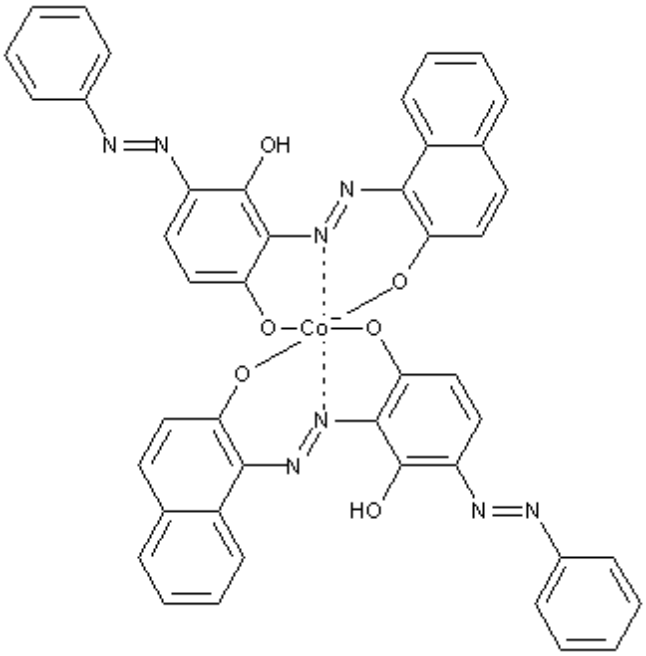
C09B 45/28

containing copper



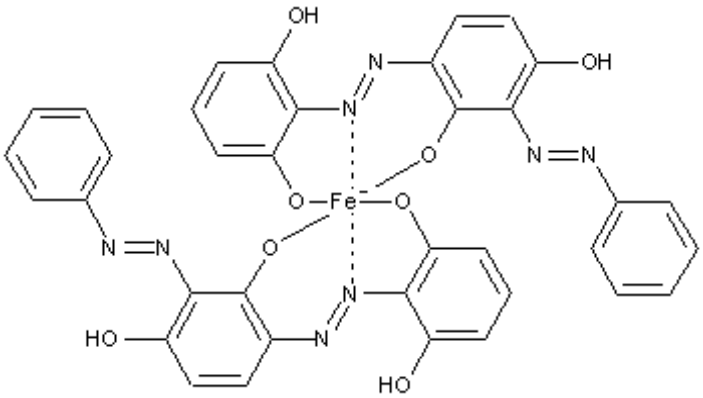
C09B 45/30

containing cobalt



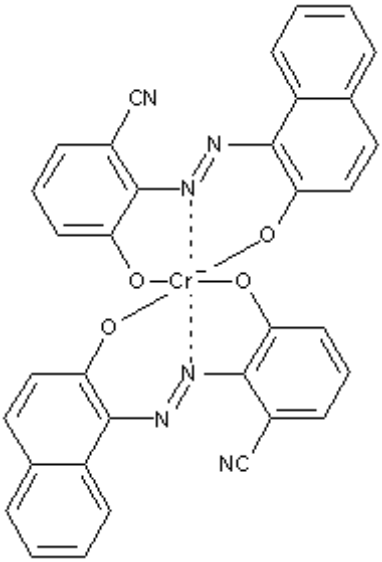
C09B 45/32

containing other metals



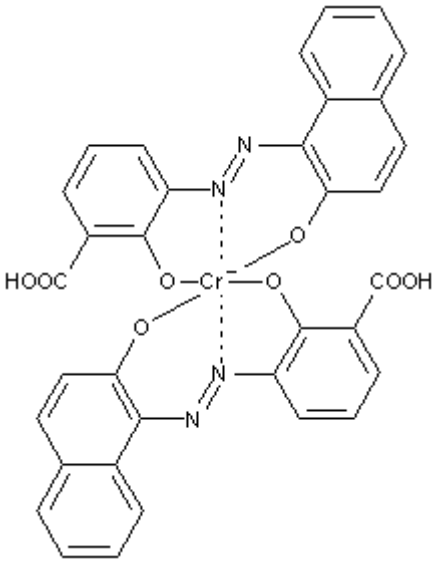
C09B 45/34

Preparation from o-monohydroxy azo compounds having in the o-position an atom or functional group other than hydroxyl, alkoxy, carboxyl, amino or keto groups



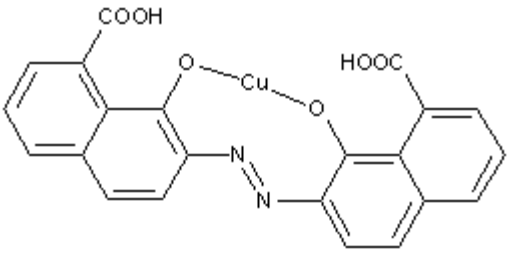
C09B 45/40

containing chromium



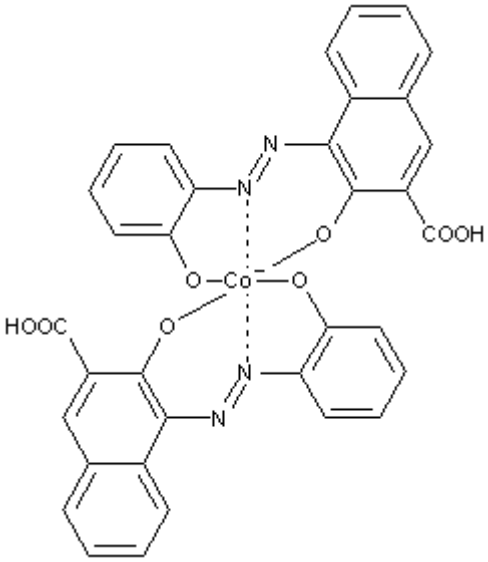
C09B 45/42

containing copper



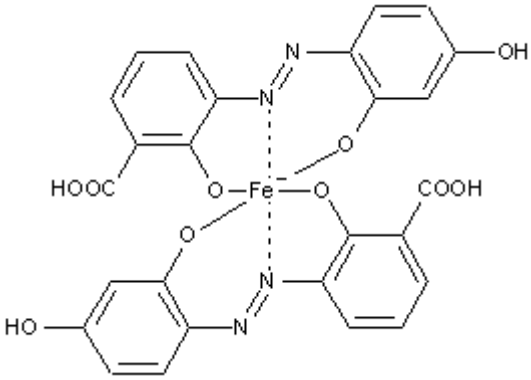
C09B 45/44

containing cobalt



C09B 45/46

containing other metals



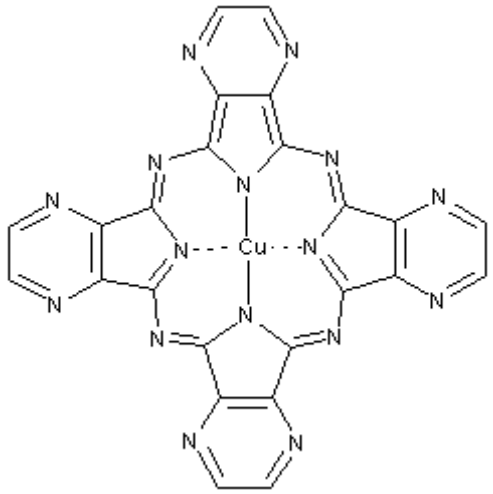
C09B 47/00

Porphines; Azaporphines {(non-dyeing compounds C07D 487/22)}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



Special rules of classification

In case the preparation process of the disclosed phthalocyanine resp. naphthalocyanine is not described, all possible synthesis processes should be classified

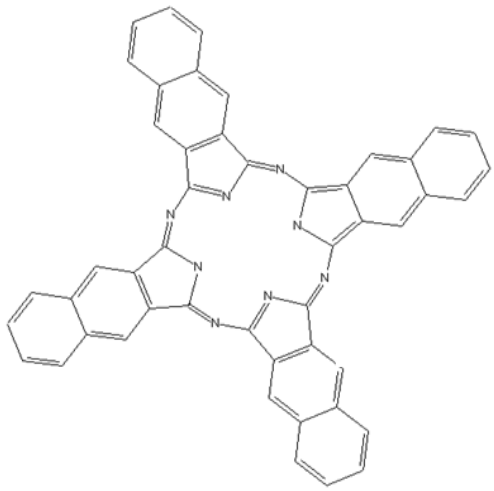
C09B 47/04

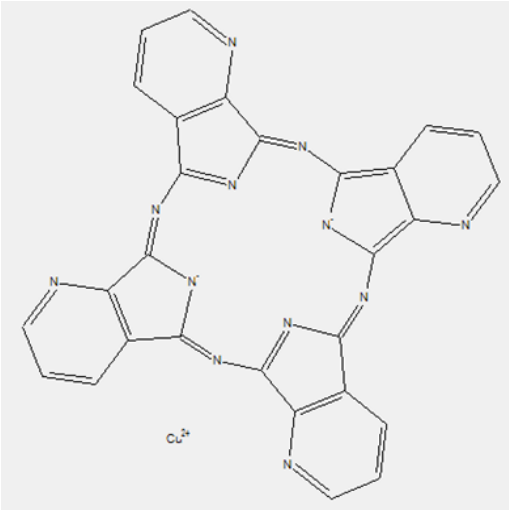
Phthalocyanines {abbreviation: Pc}

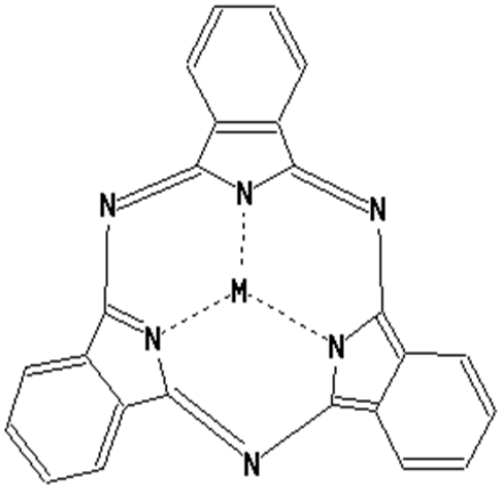
Definition statement

This place covers:

Phthalocyanine compounds, e.g. naphthalocyanines, azaphthalocyanines and subphthalocyanines as illustrated by the examples below.







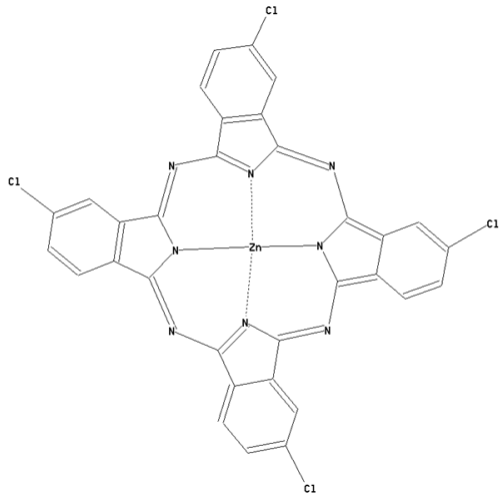
C09B 47/10

Obtaining compounds having halogen atoms directly bound to the phthalocyanine skeleton

Definition statement

This place covers:

Preparation from other phthalocyanine compounds, phthalocyanine compounds containing halogen atoms directly bound to the phthalocyanine skeleton as illustrated by the example below.



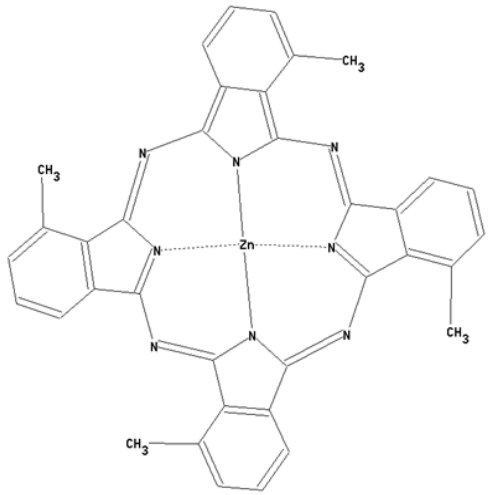
C09B 47/12

Obtaining compounds having alkyl radicals, or alkyl radicals substituted by hetero atoms, bound to the phthalocyanine skeleton

Definition statement

This place covers:

Preparation from other phthalocyanine compounds, phthalocyanine compounds containing alkyl radicals, or alkyl radicals substituted by hetero atoms, bound to the phthalocyanine skeleton as illustrated by the example below.



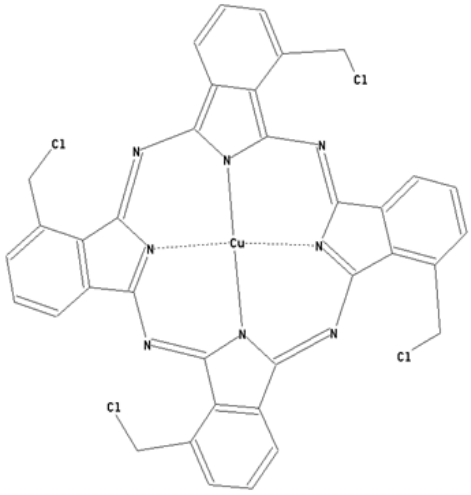
C09B 47/14

having alkyl radicals substituted by halogen atoms

Definition statement

This place covers:

Preparation from other phthalocyanine compounds, phthalocyanine compounds containing alkyl radicals substituted by halogen atoms, bound to the phthalocyanine skeleton as illustrated by the example below.



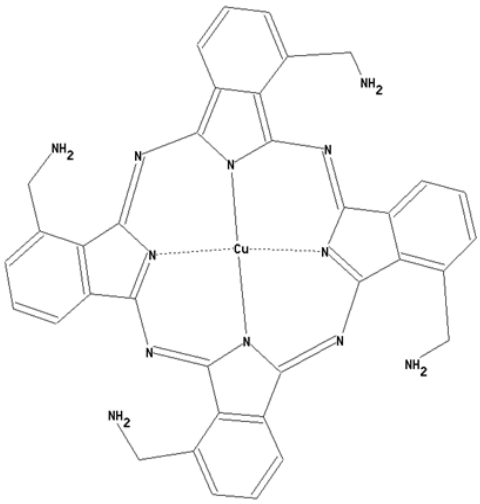
C09B 47/16

having alkyl radicals substituted by nitrogen atoms

Definition statement

This place covers:

Preparation from other phthalocyanine compounds, phthalocyanine compounds containing alkyl radicals substituted by nitrogen atoms, bound to the phthalocyanine skeleton as illustrated by the example below.



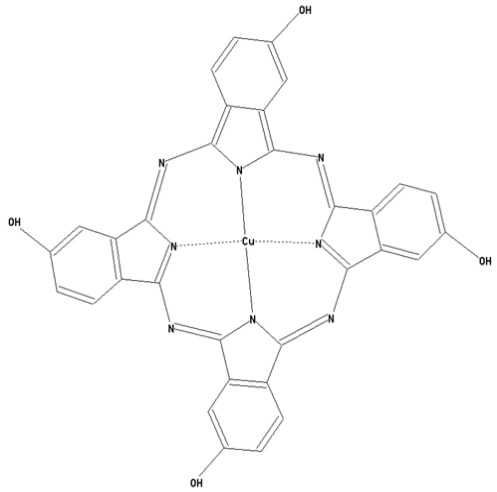
C09B 47/18

Obtaining compounds having oxygen atoms directly bound to the phthalocyanine skeleton

Definition statement

This place covers:

Preparation from other phthalocyanine compounds, phthalocyanine compounds containing oxygen atoms directly bound to the phthalocyanine skeleton as illustrated by the example below.



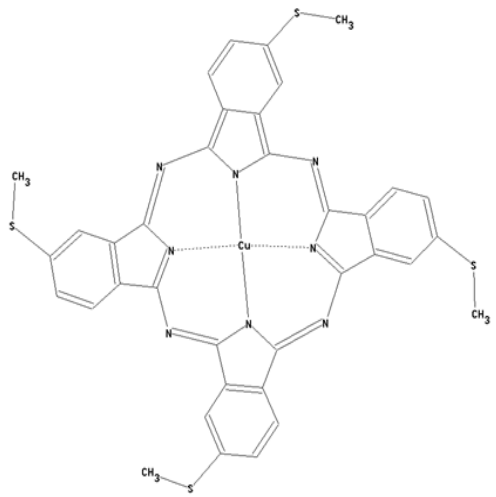
C09B 47/20

Obtaining compounds having sulfur atoms directly bound to the phthalocyanine skeleton

Definition statement

This place covers:

Preparation from other phthalocyanine compounds, phthalocyanine compounds containing sulfur atoms directly bound to the phthalocyanine skeleton as illustrated by the example below.



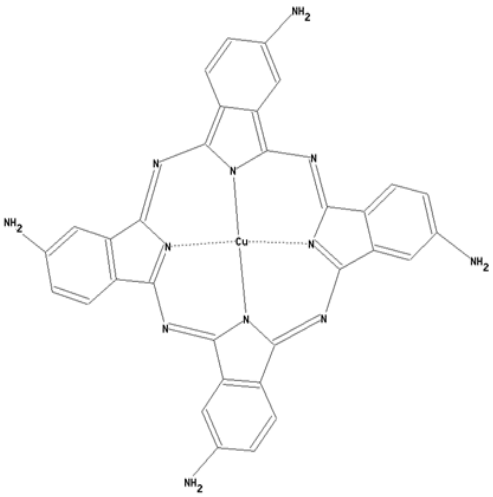
C09B 47/22

Obtaining compounds having nitrogen atoms directly bound to the phthalocyanine skeleton

Definition statement

This place covers:

Preparation from other phthalocyanine compounds, phthalocyanine compounds containing nitrogen atoms directly bound to the phthalocyanine skeleton as illustrated by the example below.



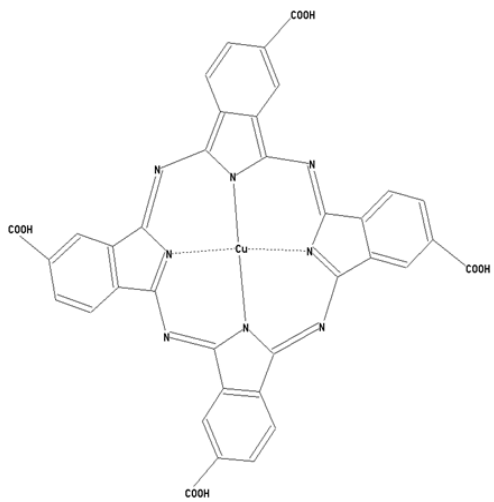
C09B 47/24

Obtaining compounds having —COOH or —SO_3H radicals, or derivatives thereof, directly bound to the phthalocyanine radical

Definition statement

This place covers:

Preparation from other phthalocyanine compounds, phthalocyanine compounds containing -COOH or -SO_3H radicals, or derivatives thereof, directly bound to the phthalocyanine skeleton as illustrated by the example below.



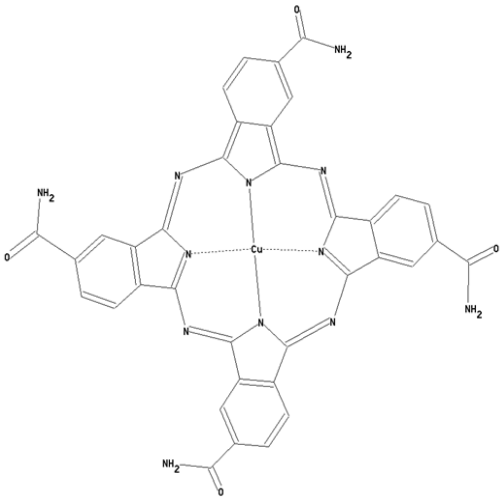
C09B 47/26

Amide radicals

Definition statement

This place covers:

Preparation from other phthalocyanine compounds, phthalocyanine compounds containing amide radicals, directly bound to the phthalocyanine skeleton as illustrated by the example below



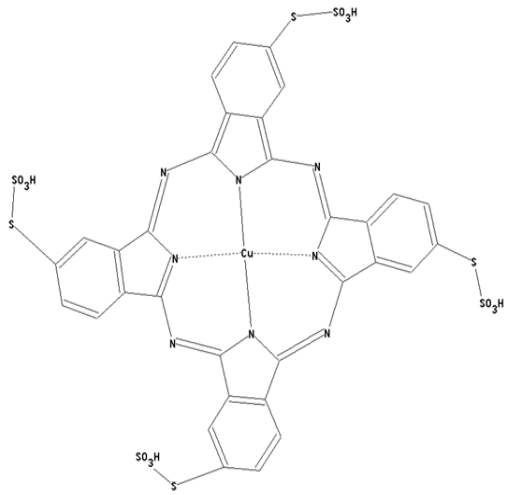
C09B 47/28

Phthalocyanine dyes containing —S—SO_3H radicals

Definition statement

This place covers:

Phthalocyanine dyes containing -S-SO_3H radicals as illustrated by the example below.



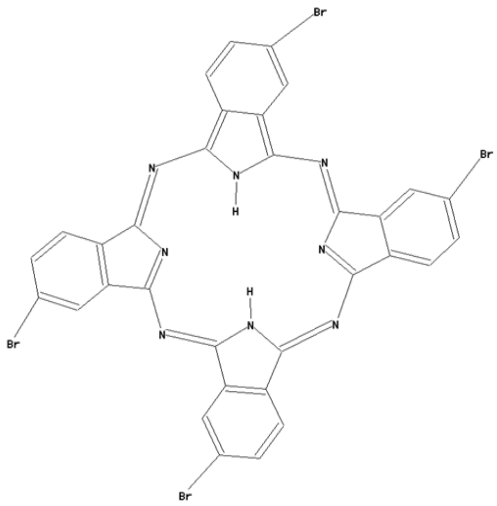
C09B 47/30

Metal-free phthalocyanines

Definition statement

This place covers:

Metal-free phthalocyanines as illustrated by the example below.



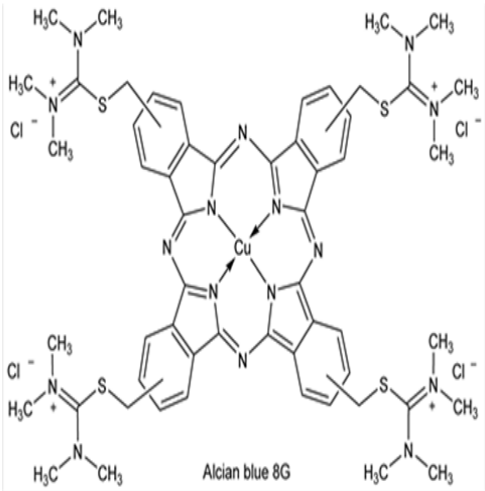
C09B 47/32

Cationic phthalocyanine dyes

Definition statement

This place covers:

Cationic phthalocyanine dyes as illustrated by the example below.



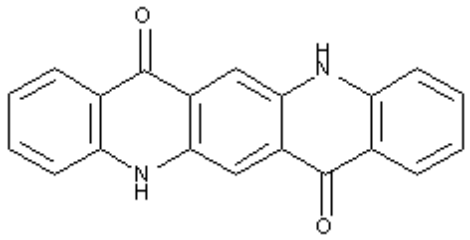
C09B 48/00

Quinacridones

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



C09B 49/00

Sulfur dyes

Definition statement

This place covers:

Dyes/Colorants obtained by heating a variety of organic compounds with sulfur or alkali polysulfides. Also colorants bearing a disulfid bridge (-S-S-) or a terminal thiol group (or derivatives thereof) might be classified here.

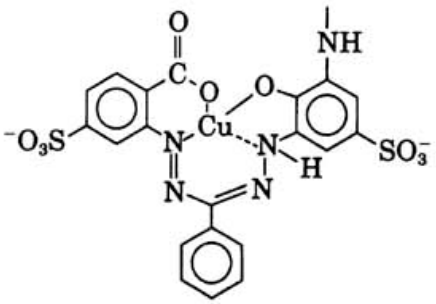
C09B 50/00

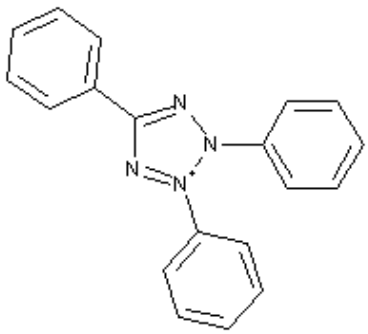
Formazane dyes; Tetrazolium dyes

Definition statement

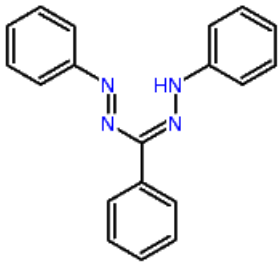
This place covers:

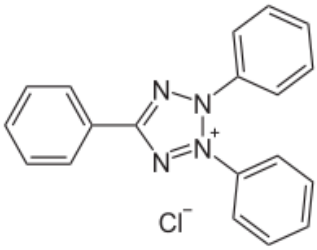
Formazane dyes (left);Tetrazolium dyes (right)



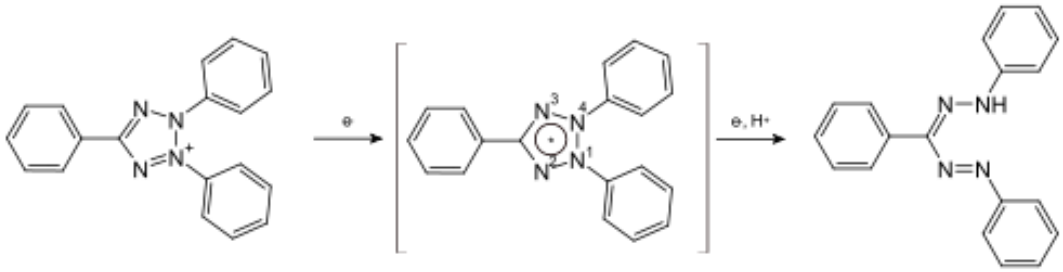


The two structures above are merely examples of the two dye classes covered by C09B 50/00 and sub groups; generally, formazane dyes comprise the basic structure as shown below, left, thereby tetrazolium dyes (below, right) show a heterocyclic ring comprising four N-atoms:





A few documents classified in C09B 50/00 disclose the transfer of the (water soluble) tertazolium precursor into its (water insoluble) formazane derivative (see scheme below):

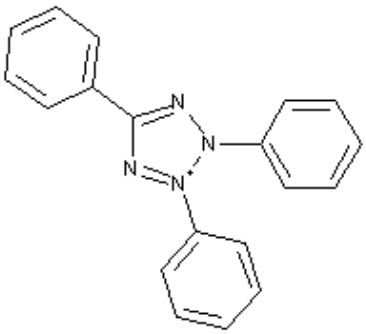


Special rules of classification

Further details of subgroups:

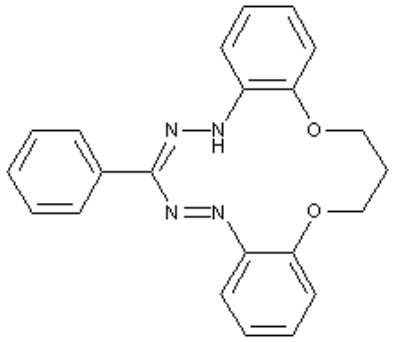
C09B 50/02

Tetrazolium dyes:



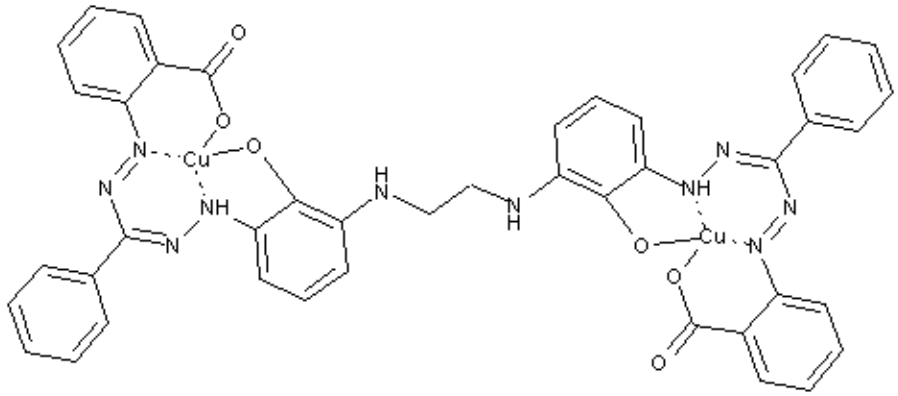
C09B 50/04

Metal-free Formazane dyes:



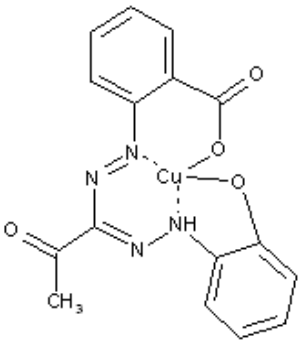
C09B 50/06

Bis-formazan dyes



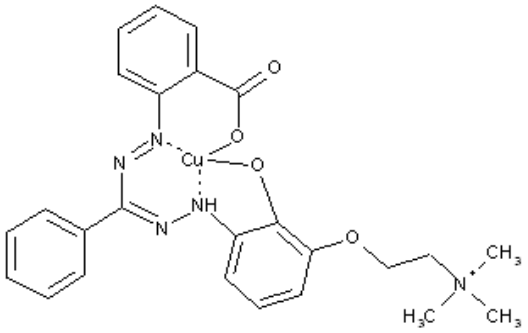
C09B 50/08

Meso-acylformazan dyes



C09B 50/10

Cationicformazandyes



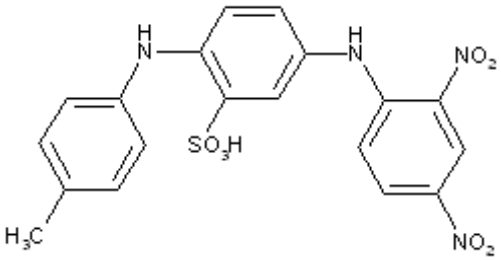
C09B 51/00

Nitro or nitroso dyes

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



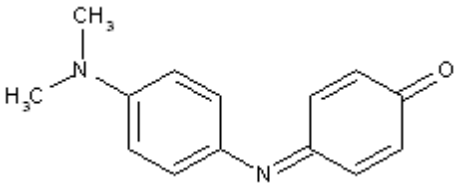
C09B 53/00

Quinone imides

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.

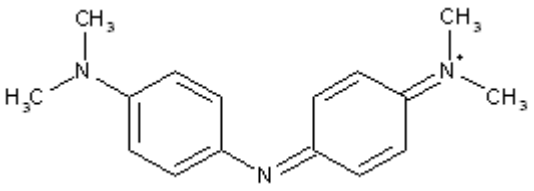


Special rules of classification

Further details of subgroups:

C09B 53/02

Indamines;Indophenols



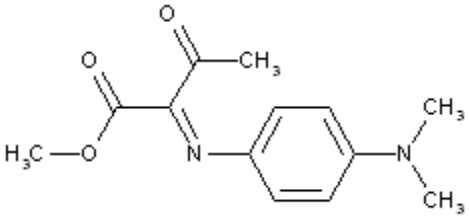
C09B 55/00

Azomethine dyes

Definition statement

This place covers:

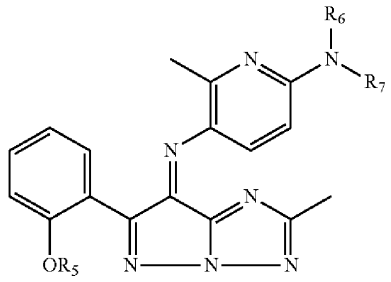
Illustrative example of subject matter classified in this group.



Special rules of classification

Further details of subgroups:

C09B 55/009



C09B 56/00

Azo dyes containing other chromophoric systems

Definition statement

This place covers:

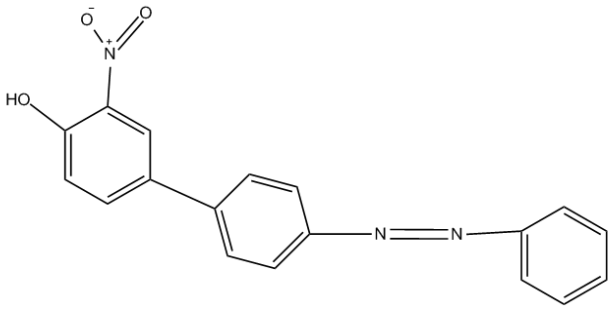
The dyes classified here show an azo-type chromophore which is covalently linked (in most cases by a common chemical linker) to a chromophore being of a different nature than the azo-type; examples might be here: azo - [chemical linker] - anthaquinone or azo - [chemical linker] - phthalocyanine etc.

Special rules of classification

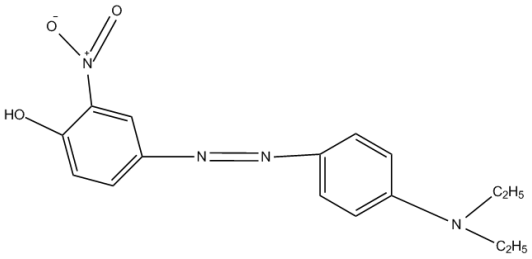
Further details of subgroups:

C09B 56/005

Azo-nitro dyes

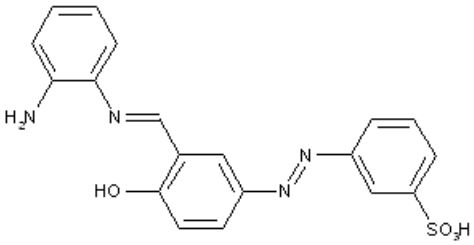


thereby, the following structure should be put into C09B 29/081:



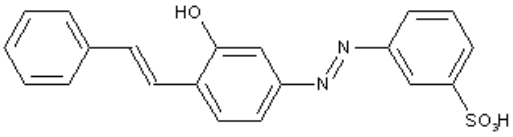
C09B 56/02

Azomethine-azo dyes 1,2-Complex dyes of AZOMETHINE and AZO dyes, C09B 55/001



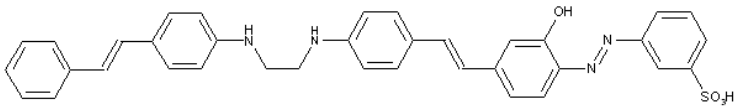
C09B 56/04

Stilbene-azo dyes disazo dyes from diaminostilbene, C09B 35/215



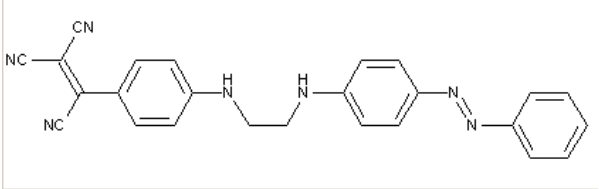
C09B 56/06

Stilbene-azo dyes disazo dyes from diaminostilbene, C09B 35/215



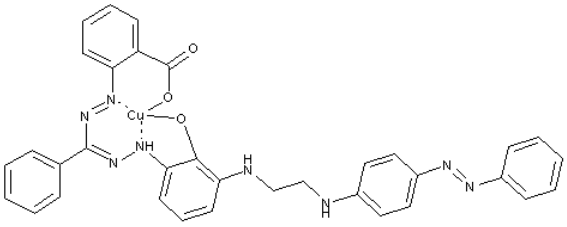
C09B 56/08

Styryl-azo dyes



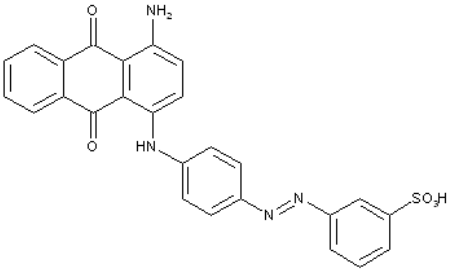
C09B 56/10

Formazane-azo dyes



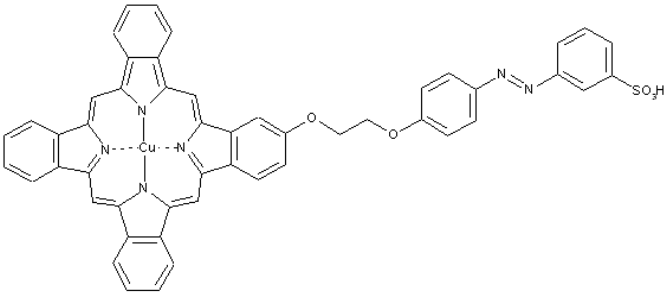
C09B 56/12

Anthraquinone-azo dyes from diazotised amino anthracene C09B 29/0022, azo dyes containing hydroxyl groups acylated with polyfunctional anthraquinone derivatives C09B 43/26



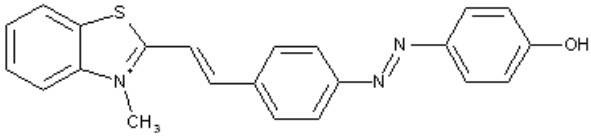
C09B 56/14

Phthalocyanine-azo dyes



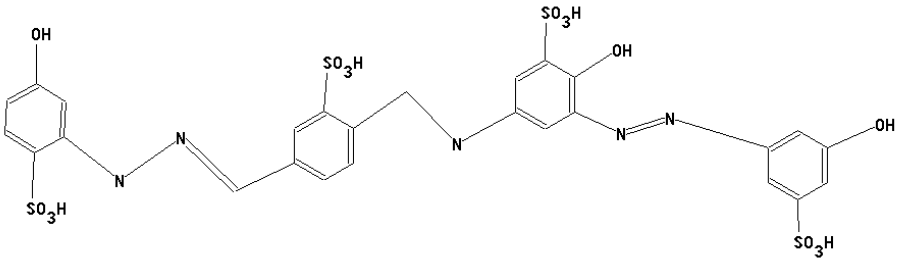
C09B 56/16

Methine- or polymethine-azo dyes



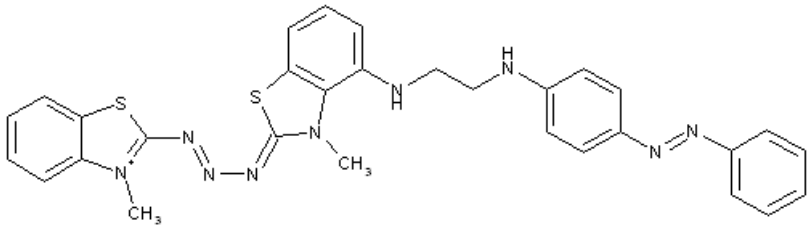
C09B 56/18

Hydrazone-azo dyes, e.g.



C09B 56/20

Triazene-azo dyes



C09B 57/00

Other synthetic dyes of known constitution

Definition statement

This place covers:

Documents dealing with colorants not belonging to the groups C09B 1/00 through C09B 56/00.

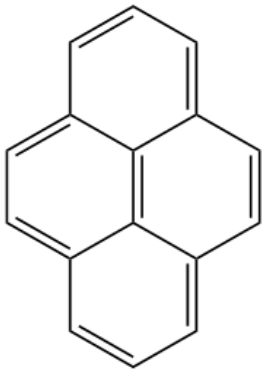
Special rules of classification

See here also the main group C09B 59/00

Further details of subgroups:

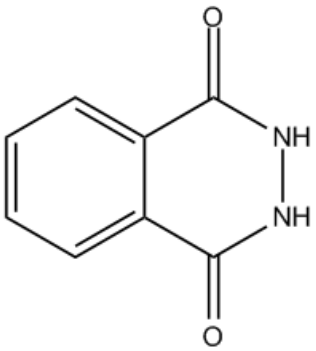
C09B 57/001

Pyrene dyes



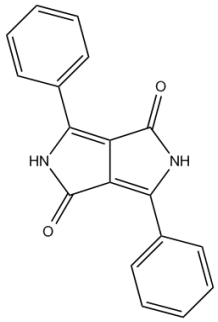
C09B 57/002

Aminoketone dyes, e.g. arylaminoketone dyes (C09B 13/00 takes precedence)



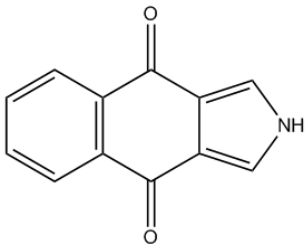
C09B 57/004

Diketo-pyrrolo-pyrrole dyes



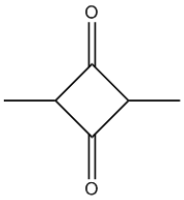
C09B 57/005

N: Pyrocolline; Phthalcoylpyrrocolline dyes



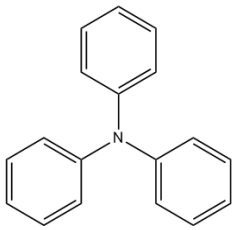
C09B 57/007

Squaraine dyes



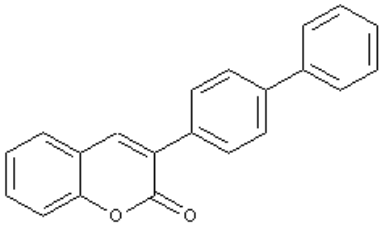
C09B 57/008

Triarylamine dyes containing no other chromophores [N1006]



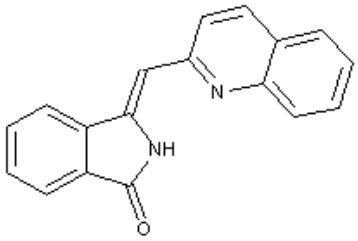
C09B 57/02

Coumarine dyes



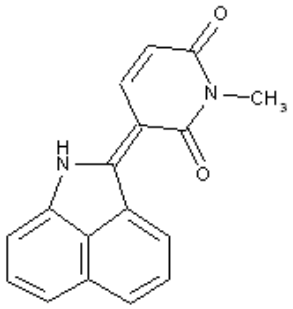
C09B 57/04

Isoindoline dyes



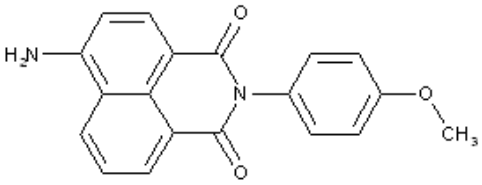
C09B 57/06

Naphtholactam dyes



C09B 57/08

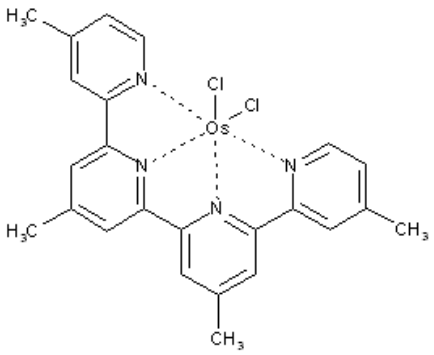
Naphthalimide dyes; Phthalimide dyes



C09B 57/10

Metal complexes of organic compounds not being dyes in uncomplexed form

in the formula below, the ligand itself is not coloured, the complex as such is coloured



C09B 59/00

Artificial dyes of unknown constitution

Definition statement

This place covers:

In some cases it is not possible to analyse a well defined chemical structure of a dye or pigment. To this class of dyes belong e.g. the nigrosine dyes (a mixture of benzo-quinoxaline type chromophores), melanin-type colorants, some aniline condensed dyes, some vat dyes etc. Documents dealing with such colorant matters should be classified herein.

Special rules of classification

See here also the main group C09B 57/00

C09B 61/00

Dyes of natural origin prepared from natural sources{, e.g. vegetable sources}

Definition statement

This place covers:

Dyes resp. pigments of natural origin being found e.g. in plants or animals (e.g. madder, brazilwood, logwood, weld, woad, indigo etc). Some natural dyes, such as cochineal, come from insects, or from mineral sources; they have to be isolated from the natural materials by common techniques like crushing, extracting, boiling with certain solvents, filtering, to mention only a few techniques. Documents dealing with those colorants should be classified here.

C09B 62/00

Reactive dyes, i.e. dyes which form covalent bonds with the substrates or which polymerise with themselves

Definition statement

This place covers:

A reactive dye comprises a chromophore as the color giving moiety and a substituent which is suitable to react directly with functional groups of the substrate to be coloured or printed. Such reactive dyes normally have good fastness properties, especially washing, wet or sweat fastnesses; most commonly they are used in dyeing of cellulose materials like cotton or flax, but also wool is dyeable with reactive dyes. Documents dealing with such reactive dyes should be classified here.

Special rules of classification

Further details of subgroups:

C09B 62/4401

with two or more reactive groups at least one of them being directly attached to a heterocyclic system and at least one of them being directly attached to a non-heterocyclic system

C09B 62/465

the reactive group being an acryloyl group, a quaternised or non-quaternised

aminoalkyl carbonyl group or a (-N)n-CO-A-O-X or (-N)n-CO-A-Hal group, wherein

A is an alkylene or alkylidene group, X is hydrogen or an acyl radical of an organic

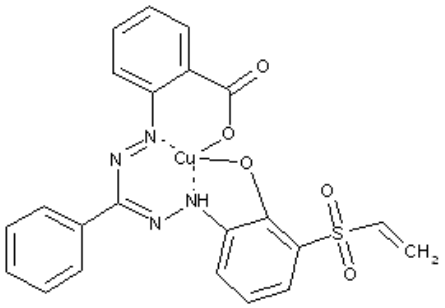
or inorganic acid, Hal is a halogen atom, and n is 0 or 1

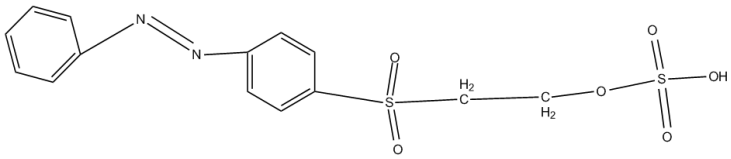
C09B 62/503

the reactive group being an esterified or non-esterified hydroxyalkyl sulfonyl or

mercaptoalkyl sulfonyl group, a quaternised or non-quaternised aminoalkyl sulfonyl group, a heterylmercapto alkyl sulfonyl group, a vinyl sulfonyl or a substituted vinyl sulfonyl group, or a thiophene-dioxide group;

examples for reactive dyes with a vinyl sulfonyl group or an esterified hydroxyalkyl sulfonyl group (sulfatoethyl) see below:





C09B 62/517

Porphines; Azaporphines (C09B 62/5033, C09B 62/5036 take precedence)

C09B 62/523

the reactive group being an esterified or non-esterified hydroxyalkyl sulfonyl amido or hydroxyalkyl amino sulfonyl group, a quaternised or non-quaternised amino alkyl sulfonyl amido group, or a substituted alkyl amino sulfonyl group, or a halogen alkyl sulfonyl amido or halogen alkyl amino sulfonyl group or a vinyl sulfonylamido or a substituted vinyl sulfonamido group

C09B 62/62

the reactive group being an ethylenimino or N-acylated ethylenimino group or a -CO-NH-CH2-CH2-X group, wherein X is a halogen atom, a quaternary ammonium group or O-acyl and acyl is derived from an organic or inorganic acid, or a beta-substituted ethylamine group

C09B 63/00

Lakes

Definition statement

This place covers:

Lakes generally are insoluble colorants which are obtained by transferring soluble colorants by certain binders/metal salts into insoluble ones, which have then the properties of pigments.

They can be manufactured by precipitating a dye with an inert binder or dyes made immobilised by e.g. adsorbing it on silica surfaces or concrete.

Water-soluble functional dyes could e.g. be incorporated in a silica matrix with a specified low bleeding rate (' immobilised ').

Further, a water-soluble dye comprising acid groups could be transferred into a pigment/lake by precipitating it with certain metal salts (e.g. earth alcaline metals like Ca2+, Ba2+) into an insoluble salt (this is called 'laking' a dye), see here C09B 63/005 below.

Special rules of classification

Further details of subgroups:

C09B 63/005

Metal lakes of dyes; e.g. azo dyes with SO3H groups made insoluble by salting out with cations of alkaline earth metals like Ca2+, Mg2+ or also Al3+; metal complexes of azo dyes see main group C09B 45/00 and sub groups; complexes of metals with ligands being colourless in uncomplexed form see C09B 57/10

C09B 65/00

Compositions containing mordants

Definition statement

This place covers:

Compositions containing mordants; thereby dyes are reacted with so-called mordants; mordants are in most cases metal salts already comprised in the material to be colored (textiles, fibres etc.) by pre-treatment; the dyes build complexes with these metals and are by this way fixed to the material

C09B 67/00

Influencing the physical, e.g. the dyeing or printing properties of dyestuffs without chemical reactions, e.g. by treating with solvents {grinding or grinding assistants, coating of pigments or dyes}; Process features in the making of dyestuff preparations; Dyestuff preparations of a special physical nature, e.g. tablets, films

Definition statement

This place covers:

Post-treatment of organic pigments, crystal modifications thereof, their preparation, blends of dyes and pigments, process features in the making of dyestuff/pigment preparations; solution of dyes/pigments; dispersions of dyes/pigments; dyes in solid form; purification, precipitation, filtration of dyes/pigments; dye/pigment preparation of special physical nature; organic pigments exhibiting interference colours (e.g. nacrous pigments). C09B 67/00 does generally not enclose the chemical modification of pigments (see here: C09B 68/00 and sub groups)

Special rules of classification

Further details of subgroups:

C09B 67/0001

After the synthesis the obtained organic pigment, the so-called raw-pigment does not have sufficient pigment properties (e.g. with view to colour strength, average particle size, dispersability, crystal modification etc.) to be applied to a material. Therefore further conditioning of the pigment is necessary, which can consist of milling, solvent treatment, acid treatment, tempering, combining with dispersants etc. and combinations thereof. Such conditioning processes ('post-treatment') are a major part of the this subgroup C09B 67/0001.

C09B 67/0096

e.g. membrane processes like ultra-, micro-, nanofiltration; ultra-centrifugation; solvent extraction; combining precipitation and dissolution steps etc., for instance carried out in microreactors

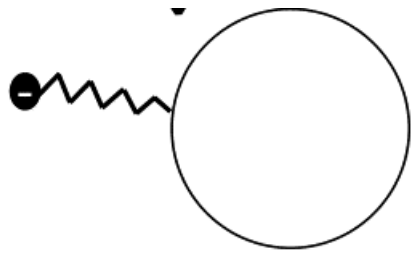
C09B 68/00

{Organic pigments surface-modified by grafting, e.g. by establishing covalent or complex bonds, in order to improve the pigment properties, e.g. dispersibility or rheology}

Definition statement

This place covers:

Illustrative example of subject matter classified in this group.



This drawing illustrates e.g. the covalent attachment of a chemical group (might be an alkylene chain) with a terminal negative charge (might be an anionic SO3- group) to the surface of a pigment, e.g. to improve dispersibility. The organic pigment particle is here represented by the ring at the right.

Special rules of classification

In this main group, in order to emphasise the difference to the main group C09B 67/00, which deals with the treatment of dyes/pigments without chemical reactions, the surface modification of pigments with chemical reactions is covered here.

Thereby in the sub groups of C09B 68/20 until C09B 68/28 the point of view is focussed on the kind of the treating process (e.g. oxidation, azo-coupling etc.), thereby the chemical nature of the introduced/ attached groups (e.g. ionic, non-ionic, cyclic, aromatic etc.) is treated in the sub groups C09B 68/40 until C09B 68/485.

C09B 69/00

Dyes not provided for by a single group of this subclass

Definition statement

This place covers:

All dyes not falling under the preceding main groups

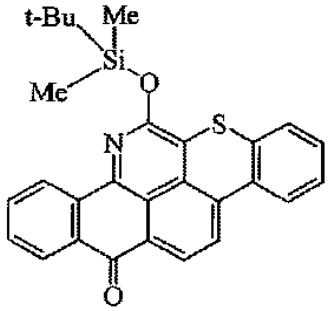
Special rules of classification

Further details of subgroups:

C09B 69/008

Dyes containing a substituent, which contains a silicium atom (see formula below):

this sub group takes precedence vis à vis the sub group for the chromophore at which the Si-containing substituent is attached (here: C09B 5/002)



C09B 69/10

This sub group covers the following compounds:

1) Polymers with at least one chromophoric system covalently linked to the polymer chain (could be attached as a pending group in the middle of the chain or as a terminal group at its end)

2) Polymers which comprise a chromophoric system as a monomer being part of the chain.

In case a polymeric polyalkylene oxid chain (e.g. -CH2CH2O- or -CH2CH2CH2O-) is linked to a dye chromophore, please put the document into the group C09B 69/00, as already indicated in this subgroup C09B 69/10.