

## SECTION C — CHEMISTRY; METALLURGY

**C09 DYES; PAINTS; POLISHES; NATURAL RESINS; ADHESIVES; COMPOSITIONS NOT OTHERWISE PROVIDED FOR; APPLICATIONS OF MATERIALS NOT OTHERWISE PROVIDED FOR****C09B ORGANIC DYES OR CLOSELY-RELATED COMPOUNDS FOR PRODUCING DYES; MORDANTS; LAKES**  
(fermentation or enzyme-using processes to synthesise a desired chemical compound C12P)**Note(s)**

In this subclass, in the absence of an indication to the contrary, a compound is classified in the last appropriate place.

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**Anthracene dyes****1/00 Dyes with an anthracene nucleus not condensed with any other ring**

- 1/02 • Hydroxy anthraquinones; Ethers or esters thereof
- 1/04 • • Preparation by synthesis of the nucleus
- 1/06 • • Preparation from starting materials already containing the anthracene nucleus
- 1/08 • • • Dyes containing only OH groups
- 1/10 • • • Dyes containing halogen
- 1/12 • • • Dyes containing sulfonic acid groups
- 1/14 • • • Dyes containing ether groups
- 1/16 • Amino anthraquinones
- 1/18 • • Preparation by synthesis of the nucleus

- 1/20 • • Preparation from starting materials already containing the anthracene nucleus
- 1/22 • • • Dyes with unsubstituted amino groups
- 1/24 • • • • sulfonated
- 1/26 • • • Dyes with amino groups substituted by hydrocarbon radicals
- 1/28 • • • • substituted by alkyl, aralkyl, or cyclo-alkyl groups
- 1/30 • • • • • sulfonated
- 1/32 • • • • • substituted by aryl groups (anthrimides C09B 1/48)
- 1/34 • • • • • sulfonated
- 1/36 • • • • Dyes with acylated amino groups
- 1/38 • • • • • Urea or thiourea derivatives

- 1/40 • • • • the acyl groups being residues of an aliphatic or araliphatic carboxylic acid
- 1/42 • • • • the acyl groups being residues of an aromatic carboxylic acid
- 1/43 • • • • • Dicarboxylic acids [3]
- 1/44 • • • • the acyl groups being residues of a heterocyclic carboxylic acid
- 1/46 • • • • the acyl groups being residues of cyanuric acid or an analogous heterocyclic compound
- 1/467 • • • • • attached to two or more anthraquinone rings [3]
- 1/473 • • • • the acyl groups being residues of a sulfonic acid [3]
- 1/48 • • • Anthrimides
- 1/50 • Amino-hydroxy anthraquinones; Ethers or esters thereof
- 1/503 • • unsubstituted amino-hydroxy anthraquinone [2]
- 1/51 • • N-substituted amino-hydroxy anthraquinone [2]
- 1/514 • • • N-aryl derivatives (N-aralkyl derivatives C09B 1/515) [2]
- 1/515 • • • N-alkyl, N-aralkyl, or N-cycloalkyl derivatives [2]
- 1/516 • • • N-acylated derivatives [2]
- 1/52 • • sulfonated
- 1/54 • • etherified
- 1/56 • Mercapto-anthraquinones
- 1/58 • • with mercapto groups substituted by aliphatic, cycloaliphatic, araliphatic or aryl radicals [3]
- 1/60 • • • substituted by aliphatic, cycloaliphatic or araliphatic radicals [3]
- 1/62 • • with mercapto groups substituted by a heterocyclic ring [3]

### **3/00 Dyes with anthracene nucleus condensed with one or more carbocyclic rings**

- 3/02 • Benzanthrone
- 3/04 • • Preparation by synthesis of the nucleus
- 3/06 • • Preparation from starting materials already containing the benzanthrone nucleus
- 3/08 • • • by halogenation
- 3/10 • • • Amino derivatives
- 3/12 • • Dibenzanthrone
- 3/14 • Perylene derivatives
- 3/16 • • Preparation by synthesis of the nucleus
- 3/18 • • Preparation from starting materials already containing the perylene nucleus
- 3/20 • • • by halogenation
- 3/22 • Dibenzanthrone; Isodibenzanthrone
- 3/24 • • Preparation by synthesis of the nucleus
- 3/26 • • • from dibenzanthronyls
- 3/28 • • • from perylene derivatives
- 3/30 • • Preparation from starting materials already containing the dibenzanthrone or isodibenzanthrone nucleus
- 3/32 • • • by halogenation
- 3/34 • • • by oxidation
- 3/36 • • • by etherification of hydroxy compounds
- 3/38 • • • by introduction of hydrocarbon or acyl residues into amino groups
- 3/40 • Pyranthrone
- 3/42 • • Preparation by synthesis of the nucleus
- 3/44 • • Preparation from starting materials already containing the pyranthrone nucleus
- 3/46 • • • by halogenation
- 3/48 • • • Amino derivatives

- 3/50 • Dibenzo-pyrenequinones
- 3/52 • • Preparation by synthesis of the nucleus
- 3/54 • • Preparation from starting materials already containing the dibenzo-pyrenequinone nucleus
- 3/56 • • • Amino derivatives
- 3/58 • Benzantraquinones
- 3/60 • Anthanthrones
- 3/62 • • Preparation by synthesis of the nucleus
- 3/64 • • Preparation from starting materials already containing the anthanthrone nucleus
- 3/66 • • • by halogenation
- 3/68 • • • Amino derivatives
- 3/70 • Benzo-, naphtho-, or anthra-dianthrone
- 3/72 • • Preparation by synthesis of the nucleus
- 3/74 • • Preparation from starting materials already containing the benzo-, naphtho-, or anthra-dianthrone nucleus
- 3/76 • • • by halogenation
- 3/78 • Other dyes in which the anthracene nucleus is condensed with one or more carbocyclic rings
- 3/80 • • Preparation by synthesis of the nucleus
- 3/82 • • Preparation from starting materials already containing the condensed anthracene nucleus

### **5/00 Dyes with an anthracene nucleus condensed with one or more heterocyclic rings with or without carbocyclic rings**

- 5/02 • the heterocyclic ring being condensed in peri position
- 5/04 • • Pyrazolanthrone
- 5/06 • • • Benzanthrone-pyrazolanthrone condensation products
- 5/08 • • • Dipyrazolanthrone
- 5/10 • • Isothiazolanthrone; Isoxazolanthrone; Isoselenazolanthrone
- 5/12 • • Thiophenanthrone
- 5/14 • • Benz-azabenzanthrone (anthrapyridone)
- 5/16 • • Benz-diazabenzanthrone, e.g. anthrapyrimidone
- 5/18 • • Coeroxene; Coerthiene; Coeramidine; Derivatives thereof
- 5/20 • • Flavanthrone
- 5/22 • • • Preparation from starting materials already containing the flavanthrone nucleus
- 5/24 • the heterocyclic ring(s) being condensed with an anthraquinone nucleus in 1-2 or 2-3 position
- 5/26 • • Carbazoles of the anthracene series
- 5/28 • • • Anthrimide carbazoles
- 5/30 • • 1,2 azoles of the anthracene series
- 5/32 • • 1,3 azoles of the anthracene series
- 5/34 • • Anthraquinone acridone or thioxanthone
- 5/36 • • • Amino acridones
- 5/38 • • • Compounds containing acridone and carbazole rings
- 5/40 • • • Condensation products of benzanthrone-amino anthraquinones
- 5/42 • • Pyridino anthraquinones
- 5/44 • • Azines of the anthracene series
- 5/46 • • • Para-diazines
- 5/48 • • • • Bis-anthraquinonediazines (indanthrone)
- 5/50 • • • • • Preparation by alkaline melting of 2-amino anthraquinones
- 5/52 • • • • • Preparation by condensation of 1,2-halogeno-amino anthraquinones
- 5/54 • • • • • Preparation from 2-amino anthrahydroquinones

- 5/56 • • • • • Preparation from starting materials already containing the indanthrene nucleus
- 5/58 • • • • • by halogenation
- 5/60 • • • Thiazines; Oxazines
- 5/62 • Cyclic imides or amidines of peri-dicarboxylic acids of the anthracene, benzanthrene, or perylene series

#### 6/00 Anthracene dyes not provided for above [2]

#### 7/00 Indigoid dyes

- 7/02 • Bis-indole indigos
- 7/04 • • Halogenation thereof
- 7/06 • Indone-thionaphthene indigos
- 7/08 • Other indole-indigos
- 7/10 • Bis-thionaphthene indigos
- 7/12 • Other thionaphthene indigos

#### 9/00 Esters or ester-salts of leuco compounds of vat dyestuffs

- 9/02 • of anthracene dyes
- 9/04 • of indigoid dyes

#### 11/00 Diaryl- or triarylmethane dyes

- 11/02 • derived from diarylmethanes
- 11/04 • derived from triarylmethanes
- 11/06 • • Hydroxy derivatives of triarylmethanes in which at least one —OH group is bound to an aryl nucleus
- 11/08 • • • Phthaleins
- 11/10 • • Amino derivatives of triarylmethanes
- 11/12 • • • without any —OH group bound to an aryl nucleus
- 11/14 • • • • Preparation from aromatic aldehydes, aromatic carboxylic acids or derivatives thereof, and aromatic amines
- 11/16 • • • • Preparation from diarylketones or diarylcarbinols
- 11/18 • • • • Preparation by oxidation
- 11/20 • • • • Preparation from other triarylmethane derivatives
- 11/22 • • • containing —OH groups bound to an aryl nucleus
- 11/24 • • • Phthaleins containing amino groups
- 11/26 • • Triarylmethane dyes in which at least one of the aromatic nuclei is heterocyclic
- 11/28 • Pyronines

#### 13/00 Oxyketone dyes

- 13/02 • of the naphthalene series, e.g. naphthazarin
- 13/04 • of the pyrene series
- 13/06 • of the acetophenone series

#### Acridine, azine, oxazine, or thiazine dyes

#### 15/00 Acridine dyes

#### 17/00 Azine dyes

- 17/02 • of the benzene series
- 17/04 • of the naphthalene series
- 17/06 • Fluorindine or its derivatives

#### 19/00 Oxazine dyes

- 19/02 • Bisoxazines prepared from amino quinones

#### 21/00 Thiazine dyes

#### Quinoline or polymethine dyes

#### 23/00 Methine or polymethine dyes, e.g. cyanine dyes

- 23/01 • characterised by the methine chain [3]
- 23/02 • • containing an odd number of :CH groups [3]
- 23/04 • • • one :CH group, e.g. cyanines, isocyanines, pseudocyanines [3]
- 23/06 • • • three :CH groups, e.g. carbocyanines [3]
- 23/08 • • • more than three :CH groups, e.g. polycarbocyanines [3]
- 23/10 • • containing an even number of :CH groups [3]
- 23/12 • the polymethine chain being branched
- 23/14 • Styryl dyes
- 23/16 • the polymethine chain containing hetero atoms

#### 25/00 Quinophthalones

#### 26/00 Hydrazone dyes; Triazene dyes [3]

- 26/02 • Hydrazone dyes (hydrazone-azo dyes C09B 56/18) [3]
- 26/04 • • cationic [3]
- 26/06 • Triazene dyes (triazene-azo dyes C09B 56/20) [3]

#### Azo dyes

#### Note(s)

In groups C09B 27/00-C09B 46/00, 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.

#### 27/00 Azo dyes in which the azo group is formed in any way other than by diazotising and coupling

- 27/06 • Tartrazines [3]

#### 29/00 Monoazo dyes prepared by diazotising and coupling

- 29/01 • characterised by the diazo component [3]
- 29/02 • • from diazotised o-amino-hydroxy compounds [3]
- 29/03 • • from diazotised o-amino carboxylic acids or o-amino-sulfonic acids [3]
- 29/033 • • from diazotised amines containing a heterocyclic ring [3]
- 29/036 • • • the heterocyclic ring containing only nitrogen as hetero atoms [3]
- 29/039 • • • the heterocyclic ring containing nitrogen and sulfur as hetero atoms [3]
- 29/042 • • • • the hetero ring being a thiazole ring [3]
- 29/045 • • • • Benzothiazoles [3]
- 29/048 • • • • the hetero ring being a thiadiazole ring [3]
- 29/06 • from coupling components containing amino as the only directing group
- 29/08 • • Amino benzenes
- 29/085 • • • coupled with diazotised anilines [3]
- 29/09 • • • coupled with diazotised amines containing heterocyclic rings [3]
- 29/095 • • Amino naphthalenes [3]
- 29/10 • from coupling components containing hydroxy as the only directing group
- 29/12 • • of the benzene series
- 29/14 • • • Hydroxy carboxylic acids
- 29/15 • • of the naphthalene series [3]

- 29/16 • • • Naphthol-sulfonic acids [3]
- 29/18 • • ortho-Hydroxy carbonamides
- 29/20 • • • of the naphthalene series
- 29/22 • • • of heterocyclic compounds
- 29/24 • from coupling components containing both hydroxy and amino directing groups
- 29/26 • • Amino phenols
- 29/28 • • Amino naphthols
- 29/30 • • • Amino naphtholsulfonic acid
- 29/32 • from coupling components containing a reactive methylene group
- 29/33 • • Aceto- or benzoyl-acetylarylates [3]
- 29/34 • from other coupling components
- 29/36 • • from heterocyclic compounds
- 29/40 • • • containing a five-membered ring with one nitrogen atom as the only ring hetero atom [3]
- 29/42 • • • containing a six-membered ring with one nitrogen atom as the only ring hetero atom [3]
- 29/44 • • • Quinolines or hydrogenated quinolines [3]
- 29/46 • • • 1,2-Diazoles or hydrogenated 1,2-diazoles [3]
- 29/48 • • • • Amino-1,2-diazoles [3]
- 29/50 • • • • 1,2-Diazolones [3]
- 29/52 • • • Diazines [3]

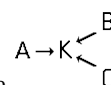
**31/00 Disazo or polyazo dyes of the type  $A \rightarrow B \rightarrow C$ ,  $A \rightarrow B \rightarrow C \rightarrow D$ , or the like, prepared by diazotising and coupling**

- 31/02 • Disazo dyes
- 31/04 • • from a coupling component "C" containing a directive amino group
- 31/043 • • • Amino benzenes [3]
- 31/047 • • • containing acid groups, e.g.  $-\text{COOH}$ ,  $-\text{SO}_3\text{H}$ ,  $-\text{PO}_3\text{H}_2$ ,  $-\text{OSO}_3\text{H}$ ,  $-\text{OPO}_2\text{H}_2$ ; Salts thereof [3]
- 31/053 • • • Amino naphthalenes [3]
- 31/057 • • • containing acid groups, e.g.  $-\text{COOH}$ ,  $-\text{SO}_3\text{H}$ ,  $-\text{PO}_3\text{H}_2$ ,  $-\text{OSO}_3\text{H}$ ,  $-\text{OPO}_2\text{H}_2$ ; Salts thereof [3]
- 31/06 • • from a coupling component "C" containing a directive hydroxy group
- 31/062 • • • Phenols [3]
- 31/065 • • • containing acid groups, e.g.  $-\text{COOH}$ ,  $-\text{SO}_3\text{H}$ ,  $-\text{PO}_3\text{H}_2$ ,  $-\text{OSO}_3\text{H}$ ,  $-\text{OPO}_2\text{H}_2$ ; Salts thereof [3]
- 31/068 • • • Naphthols [3]
- 31/072 • • • containing acid groups, e.g.  $-\text{COOH}$ ,  $-\text{SO}_3\text{H}$ ,  $-\text{PO}_3\text{H}_2$ ,  $-\text{OSO}_3\text{H}$ ,  $-\text{OPO}_2\text{H}_2$ ; Salts thereof [3]
- 31/075 • • • ortho-Hydroxy carboxylic acid amides [3]
- 31/078 • • • containing acid groups, e.g.  $-\text{COOH}$ ,  $-\text{SO}_3\text{H}$ ,  $-\text{PO}_3\text{H}_2$ ,  $-\text{OSO}_3\text{H}$ ,  $-\text{OPO}_2\text{H}_2$ ; Salts thereof [3]
- 31/08 • • from a coupling component "C" containing directive hydroxy and amino groups
- 31/10 • • from a coupling component "C" containing reactive methylene groups
- 31/11 • • • Aceto- or benzoyl-acetylarylates [3]
- 31/12 • • from other coupling components "C"
- 31/14 • • • Heterocyclic components
- 31/143 • • • • 1,2-Diazoles [3]
- 31/147 • • • • Pyrazoles [3]
- 31/15 • • • • Indoles [3]
- 31/153 • • • • containing a six-membered ring with one nitrogen atom as the only ring hetero atom [3]

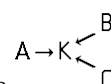
- 31/157 • • • • Quinolines or hydrogenated quinolines [3]
- 31/16 • Trisazo dyes
- 31/18 • • from a coupling component "D" containing a directive amino group
- 31/20 • • from a coupling component "D" containing a directive hydroxy group
- 31/22 • • from a coupling component "D" containing directive hydroxy and amino groups
- 31/24 • • from a coupling component "D" containing reactive methylene groups
- 31/26 • • from other coupling components "D"
- 31/28 • • • Heterocyclic compounds
- 31/30 • Other polyazo dyes

**33/00 Disazo or polyazo dyes of the types  $A \rightarrow K \leftarrow B$ ,  $A \rightarrow B \rightarrow K \leftarrow C$ , or the like, prepared by diazotising and coupling**

- 33/02 • Disazo dyes
- 33/04 • • in which the coupling component is a dihydroxy or polyhydroxy compound
- 33/044 • • • the coupling component being a bis-phenol [3]
- 33/048 • • • the coupling component being a bis-naphthol [3]
- 33/052 • • • the coupling component being a bis-(naphthol-amine) [3]
- 33/056 • • • the coupling component being a bis-(naphthol-urea) [3]
- 33/06 • • in which the coupling component is a diamine or polyamine
- 33/08 • • in which the coupling component is a hydroxy-amino compound
- 33/10 • • • in which the coupling component is an amino naphthol
- 33/12 • • in which the coupling component is a heterocyclic compound
- 33/13 • • • the coupling component being a bis-pyrazolone [3]
- 33/147 • • in which the coupling component is a bis-(o-hydroxy carboxylic acid amide) [3]
- 33/153 • • in which the coupling component is a bis-(aceto-acetyl amide) or a bis-(benzoyl-acetyl amide) [3]
- 33/16 • • from other coupling components
- 33/18 • Trisazo or higher polyazo dyes
- 33/22 • • Trisazo dyes of the type  $A \rightarrow B \rightarrow K \leftarrow C$  [3]



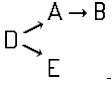
- 33/24 • • Trisazo dyes of the type  $A \rightarrow B \rightarrow K \leftarrow C$  [3]
- 33/26 • • Tetrazo dyes of the type  $A \rightarrow B \rightarrow C \rightarrow K \leftarrow D$  [3]
- 33/28 • • Tetrazo dyes of the type  $A \rightarrow B \rightarrow K \leftarrow C \leftarrow D$  [3]



- 33/30 • • Tetrazo dyes of the type  $A \rightarrow K \leftarrow C \leftarrow D$  [3]
- 33/32 • • Tetrazo dyes of the type  $A \rightarrow K \leftarrow C \rightarrow D$  [3]

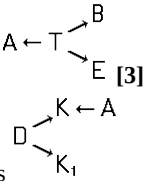
**35/00 Disazo or polyazo dyes of the type  $A \leftarrow D \rightarrow B$  prepared by diazotising and coupling**

- 35/02 • Disazo dyes
- 35/021 • • characterised by two coupling components of the same type [3]
- 35/023 • • • in which the coupling component is a hydroxy or polyhydroxy compound [3]

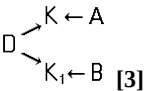
- 35/025 • • • in which the coupling component is an amine or polyamine [3]
- 35/027 • • • in which the coupling component is a hydroxy-amino compound [3]
- 35/029 • • • • Amino naphthol [3]
- 35/03 • • • in which the coupling component is a heterocyclic compound [3]
- 35/031 • • • • containing a six-membered ring with one nitrogen atom as the only ring hetero atom [3]
- 35/033 • • • in which the coupling component is an arylamide of an o-hydroxy carboxylic acid or of a beta-keto-carboxylic acid [3]
- 35/035 • • • in which the coupling component contains an activated methylene group [3]
- 35/037 • • characterised by two coupling components of different types [3]
- 35/039 • • characterised by the tetrazo component [3]
- 35/04 • • • the tetrazo component being a benzene derivative [3]
- 35/06 • • • the tetrazo component being a naphthalene derivative [3]
- 35/08 • • • the tetrazo component being a derivative of biphenyl [3]
- 35/10 • • • • from two coupling components of the same type [3]
- 35/12 • • • • • from amines [3]
- 35/14 • • • • • from hydroxy compounds [3]
- 35/16 • • • • • from hydroxy amines [3]
- 35/18 • • • • • from heterocyclic compounds [3]
- 35/20 • • • • • from two coupling compounds of different types [3]
- 35/205 • • • the tetrazo component being a derivative of a diaryl- or triaryl-alkane or -alkene [3]
- 35/21 • • • • of diarylmethane or triarylmethane [3]
- 35/215 • • • • of diarylethane or diarylethene [3]
- 35/22 • • • the tetrazo component being a derivative of a diaryl ether [3]
- 35/227 • • • the tetrazo component being a derivative of a diaryl sulfide or diaryl polysulfide [3]
- 35/233 • • • the tetrazo component being a derivative of a diaryl ketone or benzil [3]
- 35/24 • • • the tetrazo component being a derivative of a diaryl amine [3]
- 35/26 • • • the tetrazo component being a derivative of a diaryl urea [3]
- 35/28 • • • the tetrazo component containing two aryl nuclei linked by at least one of the groups —CON<sub>2</sub>—, —SO<sub>2</sub>N<sub>2</sub>—, —SO<sub>2</sub>—, or —SO<sub>2</sub>O— [3]
- 35/30 • • • • from two identical coupling components [3]
- 35/32 • • • • from two different coupling components [3]
- 35/34 • • • the tetrazo component being heterocyclic [3]
- 35/35 • • Trisazo dyes in which the tetrazo component is a diamino-azo-aryl compound [3]
- 35/36 • • Trisazo dyes of the type 
- 35/362 • • D is benzene [3]
- 35/364 • • D is naphthalene [3]
- 35/366 • • D is diphenyl [3]
- 35/368 • • D is a diarylether, a diarylsulfide or a diarylpolsulfide [3]
- 35/37 • • D is a diarylamine [3]
- 35/372 • • D is a diarylurea [3]

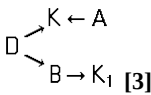
- 35/374 • • D contains two aryl nuclei linked by at least one of the groups —CON<sub>2</sub>—, —SO<sub>2</sub>N<sub>2</sub>—, —SO<sub>2</sub>—, or —SO<sub>2</sub>O— [3]

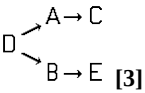
- 35/376 • • D is a heterocyclic compound [3]

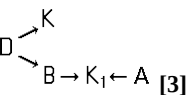
- 35/378 • • Trisazo dyes of the type 

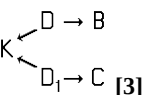
- 35/38 • • Trisazo dyes of the types
- 35/40 • • the component K being a dihydroxy or polyhydroxy compound
- 35/42 • • the component K being a diamine or polyamine
- 35/44 • • the component K being a hydroxy amine
- 35/46 • • • the component K being an amino naphthol
- 35/48 • • the component K being heterocyclic
- 35/50 • • Tetrazo dyes

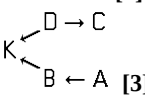
- 35/52 • • of the type 

- 35/54 • • of the type 

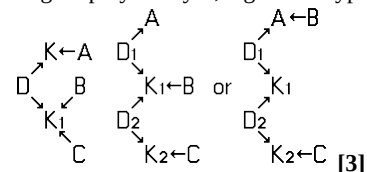
- 35/56 • • of the type 

- 35/58 • • of the type 

- 35/60 • • of the type 

- 35/62 • • of the type 

- 35/64 • • Higher polyazo dyes, e.g. of the types



- 37/00 **Azo dyes prepared by coupling the diazotised amine with itself**

- 39/00 **Other azo dyes prepared by diazotising and coupling**

- 41/00 **Special methods of performing the coupling reaction**

- 43/00 **Preparation of azo dyes from other azo compounds**

- 43/02 • by sulfonation
- 43/04 • by nitration
- 43/06 • by oxidation
- 43/08 • by reduction (deamination C09B 43/44)
- 43/10 • • with formation of a new azo or an azoxy bridge
- 43/11 • by introducing hydrocarbon radicals or substituted hydrocarbon radicals on primary or secondary amino groups (formation of an amino group by reduction, e.g. of a nitro group, C09B 43/08) [3]
- 43/12 • by acylation of amino groups
- 43/124 • • with monocarboxylic acids, carbamic esters or halides, monoisocyanates, or haloformic acid esters [3]
- 43/128 • • • Aliphatic, cycloaliphatic or araliphatic acids [3]

- 43/132 • • • having the carboxyl group directly attached to an aromatic carbocyclic ring [3]
- 43/136 • • with polyfunctional acylating agents [3]
- 43/14 • • • with phosgene or thiophosgene [3]
- 43/145 • • • with polycarboxylic acids [3]
- 43/15 • • • • with formation of cyclic imides of ortho-or peri-dicarboxylic acids [3]
- 43/155 • • • with di- or poly-isocyanates [3]
- 43/16 • • • linking amino-azo compounds with other amino compounds by cyanuric acid or cyanuric acid residues [3]
- 43/18 • by acylation of hydroxy groups
- 43/20 • • with monocarboxylic acids, carbamic acid esters or halides, monoisocyanates or haloformic acid esters [3]
- 43/22 • • • having the carboxyl group directly attached to an aromatic carbocyclic ring [3]
- 43/24 • • with formation of —O—SO<sub>2</sub>—R or —O—SO<sub>3</sub>H radicals [3]
- 43/26 • • with polyfunctional acylating agents [3]
- 43/28 • by etherification of hydroxy groups [3]
- 43/30 • by esterification of —COOH or —SO<sub>3</sub>H groups [3]
- 43/32 • by reacting carboxyl or sulfonic groups, or derivatives thereof, with amines; by reacting keto groups with amines [3]
- 43/34 • • by reacting ortho- or peri-dicarboxylic dyes [3]
- 43/36 • • with amino anthracene or amino anthraquinone dyes [3]
- 43/38 • • by reacting two or more ortho-hydroxy naphthoic acid dyes with polyamines [3]
- 43/40 • by substituting hetero atoms by radicals containing other hetero atoms [3]
- 43/42 • • by substituting radicals containing hetero atoms for —CN radicals [3]
- 43/44 • by substituting amine groups for hydroxyl groups or hydroxy groups for amine groups; Desacylation of amino-acyl groups; Deaminating [3]
- 44/00 Azo dyes containing onium groups [3]**
- 44/02 • containing ammonium groups not directly attached to an azo group [3]
- 44/04 • • from coupling components containing amino as the only directing group [3]
- 44/06 • • from coupling components containing hydroxyl as the only directing group [3]
- 44/08 • • from coupling components containing heterocyclic rings [3]
- 44/10 • containing cyclammonium groups attached to an azo group by a carbon atom of the ring system [3]
- 44/12 • • having one nitrogen atom as the only ring hetero atom [3]
- 44/14 • • 1,2-Diazoles or hydrogenated 1,2-diazoles [3]
- 44/16 • • 1,3-Diazoles or hydrogenated 1,3-diazoles [3]
- 44/18 • • having three nitrogen atoms as the only ring hetero atoms [3]
- 44/20 • • Thiazoles or hydrogenated thiazoles [3]
- 45/00 Complex metal compounds of azo dyes**
- 45/01 • characterised by the method of metallisation [3]
- 45/02 • Preparation from dyes containing in o-position a hydroxy group and in o1-position hydroxy, alkoxy, carboxyl, amino, or keto groups [2]
- 45/04 • • Azo compounds in general
- 45/06 • • • Chromium compounds
- 45/08 • • • Copper compounds
- 45/10 • • • Cobalt compounds

- 45/12 • • • other metal compounds
- 45/14 • • Monoazo compounds
- 45/16 • • • containing chromium
- 45/18 • • • containing copper
- 45/20 • • • containing cobalt
- 45/22 • • • containing other metals
- 45/24 • • Disazo or polyazo compounds
- 45/26 • • • containing chromium
- 45/28 • • • containing copper
- 45/30 • • • containing cobalt
- 45/32 • • • containing other metals
- 45/34 • Preparation from o-monohydroxy azo compounds having in the o1-position an atom or functional group other than hydroxy, alkoxy, carboxyl, amino, or keto groups
- 45/36 • • by oxidation of hydrogen in o1-position
- 45/38 • Preparation from compounds with —OH and —COOH adjacent in the same ring or in peri position
- 45/40 • • Chromium compounds
- 45/42 • • Copper compounds
- 45/44 • • Cobalt compounds
- 45/46 • • Other metal compounds
- 45/48 • Preparation from other complex metal compounds of azo dyes
- 46/00 Azo dyes not provided for in groups C09B 27/00-C09B 45/00 [2]**

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**47/00 Porphines; Azaporphines**

- 47/04 • Phthalocyanines [3]
- 47/06 • • Preparation from carboxylic acids or derivatives thereof [3]
- 47/067 • • • from phthalodinitriles [3]
- 47/073 • • Preparation from isoindolenines [3]
- 47/08 • • Preparation from other phthalocyanine compounds [3]
- 47/10 • • • Obtaining compounds having halogen atoms directly bound to the phthalocyanine skeleton [3]
- 47/12 • • • Obtaining compounds having alkyl radicals, or alkyl radicals substituted by hetero atoms, bound to the phthalocyanine skeleton [3]
- 47/14 • • • • having alkyl radicals substituted by halogen atoms [3]
- 47/16 • • • • having alkyl radicals substituted by nitrogen atoms [3]
- 47/18 • • • Obtaining compounds having oxygen atoms directly bound to the phthalocyanine skeleton [3]
- 47/20 • • • Obtaining compounds having sulfur atoms directly bound to the phthalocyanine skeleton [3]
- 47/22 • • • Obtaining compounds having nitrogen atoms directly bound to the phthalocyanine skeleton [3]
- 47/24 • • • Obtaining compounds having —COOH or —SO<sub>3</sub>H radicals, or derivatives thereof, directly bound to the phthalocyanine radical [3]
- 47/26 • • • • Amide radicals [3]
- 47/28 • • Phthalocyanine dyes containing —S—SO<sub>3</sub>H radicals [3]
- 47/30 • • Metal-free phthalocyanines [3]
- 47/32 • • Cationic phthalocyanine dyes [3]

- 48/00 Quinacridones**
- 49/00 Sulfur dyes**
- 49/02 • from nitro compounds of the benzene, naphthalene or anthracene series
- 49/04 • from amino compounds of the benzene, naphthalene or anthracene series
- 49/06 • from azines, oxazines, thiazines, or thiazoles
- 49/08 • from urea derivatives
- 49/10 • from diphenylamines, indamines, or indophenols
- 49/12 • from other compounds
- 50/00 Formazane dyes; Tetrazolium dyes [3]**
- 50/02 • Tetrazolium dyes [3]
- 50/04 • Metal-free formazane dyes [3]
- 50/06 • Bis-formazane dyes [3]
- 50/08 • Meso-acyl formazane dyes [3]
- 50/10 • Cationic formazane dyes [3]
- 51/00 Nitro or nitroso dyes**
- 53/00 Quinone imides**
- 53/02 • Indamines; Indophenols
- 55/00 Azomethine dyes**
- 56/00 Azo dyes containing other chromophoric systems [3]**
- 56/02 • Azomethine-azo dyes [3]
- 56/04 • Stilbene-azo dyes [3]
- 56/06 • • Bis- or poly-stilbene-azo dyes [3]
- 56/08 • Styryl-azo dyes [3]
- 56/10 • Formazane-azo dyes [3]
- 56/12 • Anthraquinone-azo dyes [3]
- 56/14 • Phthalocyanine-azo dyes [3]
- 56/16 • Methine- or polymethine-azo dyes [3]
- 56/18 • Hydrazone-azo dyes [3]
- 56/20 • Triazene-azo dyes [3]
- 57/00 Other synthetic dyes of known constitution**
- 57/02 • Coumarine dyes [3]
- 57/04 • Isoindoline dyes [3]
- 57/06 • Naphtholactam dyes [3]
- 57/08 • Naphthalimide dyes; Phthalimide dyes [3]
- 57/10 • Metal complexes of organic compounds not being dyes in uncomplexed form [3]
- 57/12 • Perinones, i.e. naphthoylene-aryl-imidazoles [3]
- 57/14 • Benzoxanthene dyes; Benzothioxanthene dyes [3]
- 59/00 Artificial dyes of unknown constitution**
- 61/00 Dyes of natural origin prepared from natural sources**
- 62/00 Reactive dyes, i.e. dyes which form covalent bonds with the substrates or which polymerise with themselves [3]**
- 62/002 • with the linkage of the reactive group being alternatively specified [3]
- 62/004 • • Anthracene dyes [3]
- 62/006 • • Azo dyes [3]
- 62/008 • • • Monoazo dyes [3]
- 62/01 • • • Disazo or polyazo dyes [3]
- 62/012 • • • Metal complex azo dyes [3]
- 62/014 • • Nitro dyes [3]
- 62/016 • • Porphines; Azaporphines [3]
- 62/018 • • Formazane dyes [3]
- 62/02 • with the reactive group directly attached to a heterocyclic ring
- 62/022 • • the heterocyclic ring being alternatively specified [3]
- 62/024 • • • Anthracene dyes [3]
- 62/026 • • • Azo dyes [3]
- 62/028 • • • • Monoazo dyes [3]
- 62/03 • • • • Disazo or polyazo dyes [3]
- 62/032 • • • • Metal complex azo dyes [3]
- 62/034 • • • Nitro dyes [3]
- 62/036 • • • Porphines; Azaporphines [3]
- 62/038 • • • Formazane dyes [3]
- 62/04 • • to a triazine ring
- 62/06 • • • Anthracene dyes
- 62/08 • • • Azo dyes
- 62/085 • • • • Monoazo dyes [3]
- 62/09 • • • • Disazo or polyazo dyes [3]
- 62/095 • • • • Metal complex azo dyes [3]
- 62/10 • • • Porphines; Azaporphines
- 62/12 • • to a pyridazine ring
- 62/14 • • • Anthracene dyes
- 62/16 • • • Azo dyes
- 62/165 • • • • Monoazo dyes [3]
- 62/17 • • • • Disazo or polyazo dyes [3]
- 62/175 • • • • Metal complex azo dyes [3]
- 62/18 • • • Porphines; Azaporphines
- 62/20 • • to a pyrimidine ring
- 62/22 • • • Anthracene dyes
- 62/24 • • • Azo dyes
- 62/245 • • • • Monoazo dyes [3]
- 62/25 • • • • Disazo or polyazo dyes [3]
- 62/255 • • • • Metal complex azo dyes [3]
- 62/26 • • • Porphines; Azaporphines
- 62/28 • • to a pyrazine ring
- 62/30 • • • Anthracene dyes
- 62/32 • • • Azo dyes
- 62/325 • • • • Monoazo dyes [3]
- 62/33 • • • • Disazo or polyazo dyes [3]
- 62/335 • • • • Metal complex azo dyes [3]
- 62/34 • • • Porphines; Azaporphines
- 62/343 • • to a five-membered ring [3]
- 62/345 • • • Anthracene dyes [3]
- 62/347 • • • Azo dyes [3]
- 62/35 • • • • Monoazo dyes [3]
- 62/353 • • • • Disazo or polyazo dyes [3]
- 62/355 • • • • Metal complex azo dyes [3]
- 62/357 • • • Porphines; Azaporphines [3]
- 62/36 • • to some other heterocyclic ring
- 62/38 • • • Anthracene dyes
- 62/40 • • • Azo dyes
- 62/405 • • • • Monoazo dyes [3]
- 62/41 • • • • Disazo or polyazo dyes [3]
- 62/415 • • • • Metal complex azo dyes [3]
- 62/42 • • • Porphines; Azaporphines
- 62/44 • with the reactive group not directly attached to a heterocyclic ring
- 62/443 • • the reactive group being alternatively specified [3]
- 62/445 • • • Anthracene dyes [3]
- 62/447 • • • Azo dyes [3]
- 62/45 • • • • Monoazo dyes [3]
- 62/453 • • • • Disazo or polyazo dyes [3]
- 62/455 • • • • Metal complex azo dyes [3]
- 62/457 • • • Porphines; Azaporphines [3]
- 62/463 • • • Formazane dyes [3]

- 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 [3]
- 62/467 • • Anthracene dyes [3]
- 62/47 • • Azo dyes [3]
- 62/473 • • • Monoazo dyes [3]
- 62/475 • • • Disazo or polyazo dyes [3]
- 62/477 • • • Metal complex azo dyes [3]
- 62/483 • • • Porphines; Azaporphines [3]
- 62/485 • • the reactive group being a halo-cyclobutyl-carbonyl, halo-cyclobutyl-vinyl-carbonyl, or halo-cyclobutenyl-carbonyl group [3]
- 62/487 • • • Anthracene dyes [3]
- 62/489 • • • Azo dyes [3]
- 62/491 • • • • Monoazo dyes [3]
- 62/493 • • • • Disazo or polyazo dyes [3]
- 62/495 • • • • Metal complex azo dyes [3]
- 62/497 • • • Porphines; Azaporphines [3]
- 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 [3]
- 62/505 • • • Anthracene dyes [3]
- 62/507 • • • Azo dyes [3]
- 62/51 • • • • Monoazo dyes [3]
- 62/513 • • • • Disazo or polyazo dyes [3]
- 62/515 • • • • Metal complex azo dyes [3]
- 62/517 • • • Porphines; Azaporphines [3]
- 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 [3]
- 62/525 • • • Anthracene dyes [3]
- 62/527 • • • Azo dyes [3]
- 62/53 • • • • Monoazo dyes [3]
- 62/533 • • • • Disazo or polyazo dyes [3]
- 62/535 • • • • Metal complex azo dyes [3]
- 62/537 • • • Porphines; Azaporphines [3]
- 62/54 • • the reactive group being an epoxy or halohydrin group [3]
- 62/56 • • • Anthracene dyes
- 62/58 • • • Azo dyes
- 62/585 • • • • Monoazo dyes [3]
- 62/59 • • • • Disazo or polyazo dyes [3]
- 62/595 • • • • Metal complex azo dyes [3]
- 62/60 • • • Porphines; Azaporphines
- 62/62 • • the reactive group being an ethylenimino or N-acylated ethylenimino group or a  $-CO-NH-CH_2-CH_2-X$  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
- 62/64 • • • Anthracene dyes
- 62/66 • • • Azo dyes
- 62/665 • • • • Monoazo dyes [3]

- 62/67 • • • • Disazo or polyazo dyes [3]
- 62/675 • • • • Metal complex azo dyes [3]
- 62/68 • • • Porphines; Azaporphines
- 62/763 • • the reactive group being a N-methylol group or an O-derivative thereof [3]
- 62/765 • • • Anthracene dyes [3]
- 62/767 • • • Azo dyes [3]
- 62/77 • • • • Monoazo dyes [3]
- 62/773 • • • • Disazo or polyazo dyes [3]
- 62/775 • • • • Metal complex azo dyes [3]
- 62/777 • • • Porphines; Azaporphines [3]
- 62/78 • • with other reactive groups
- 62/80 • • • Anthracene dyes
- 62/82 • • • Azo dyes
- 62/825 • • • • Monoazo dyes [3]
- 62/83 • • • • Disazo or polyazo dyes [3]
- 62/835 • • • • Metal complex azo dyes [3]
- 62/84 • • • Porphines; Azaporphines

#### Lakes; Mordants; Dyestuff preparations

- 63/00 **Lakes**
- 65/00 **Compositions containing mordants**
- 67/00 **Influencing the physical, e.g. the dyeing or printing, properties of dyestuffs without chemical reaction, e.g. by treating with solvents; Process features in the making of dyestuff preparations; Dyestuff preparations of a special physical nature, e.g. tablets, films**
- 67/02 • Dyestuff preparations characterised by special physical forms, e.g. tablets, films [3]
- 67/04 • Grinding or milling (C09B 67/14 takes precedence) [3]
- 67/06 • Drying [3]
- 67/08 • Coated particulate pigments or dyes [3]
- 67/10 • Influencing the physical properties by treatment with a liquid, e.g. solvents (C09B 67/14, C09B 67/18, C09B 67/20 take precedence) [3]
- 67/12 • • of phthalocyanines [3]
- 67/14 • Influencing the physical properties by treatment with an acid [3]
- 67/16 • • of phthalocyanines [3]
- 67/18 • Influencing the physical properties by treatment with an amine [3]
- 67/20 • Preparations of organic pigments [3]
- 67/22 • Mixtures of different pigments or dyes or solid solutions of pigments or dyes [3]
- 67/24 • Preparations of acid dyes or reactive dyes [3]
- 67/26 • • in liquid form [3]
- 67/28 • Preparations of vat or sulfur dyes [3]
- 67/30 • • in liquid form [3]
- 67/32 • Preparations of cationic or basic dyes [3]
- 67/34 • • in liquid form [3]
- 67/36 • Azoic dyestuff preparations [3]
- 67/38 • Preparations of disperse dyes [3]
- 67/40 • • in liquid form [3]
- 67/42 • Preparations of dyes not provided for in a single one of groups C09B 67/24-C09B 67/40 [3]
- 67/44 • • Solutions [3]
- 67/46 • • Dispersions [3]
- 67/48 • Crystalline modifications of pigments or dyestuff (C09B 67/24 takes precedence) [3]
- 67/50 • • of phthalocyanines [3]



- 67/52 • • of quinacridones [3]
  - 67/54 • Separation; Purification (C09B 67/06, C09B 67/10 take precedence) [3]
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**69/00 Dyes not provided for by a single group of this subclass [2]**

- 69/02 • Dyestuff salts, e.g. salts of acid dyes with basic dyes (for Na, K, or NH<sub>4</sub><sup>+</sup> salts of dyes or for chlorides, sulfates or chlorozincates, see the relevant dye groups) [3]
- 69/04 • • of anionic dyes with nitrogen containing compounds [3]
- 69/06 • • of cationic dyes with organic acids [3]
- 69/08 • Dyes containing a splittable water solubilising group [3]
- 69/10 • Polymeric dyes; Reaction products of dyes with monomers or with macromolecular compounds [3]