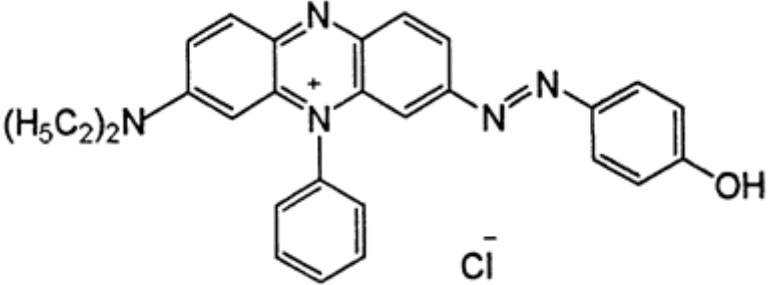
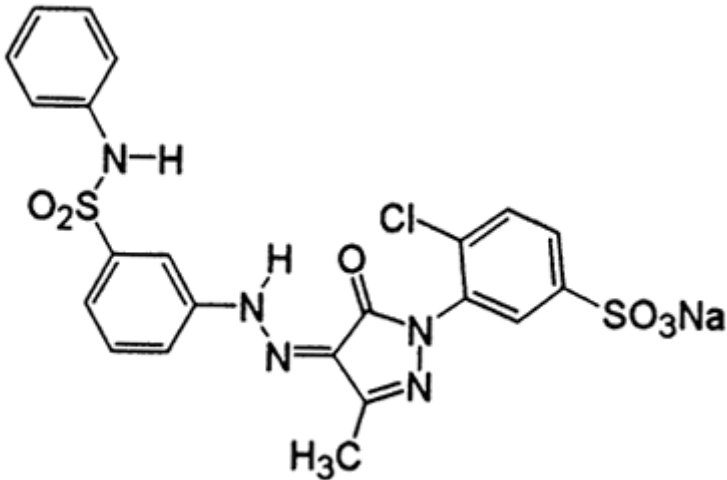
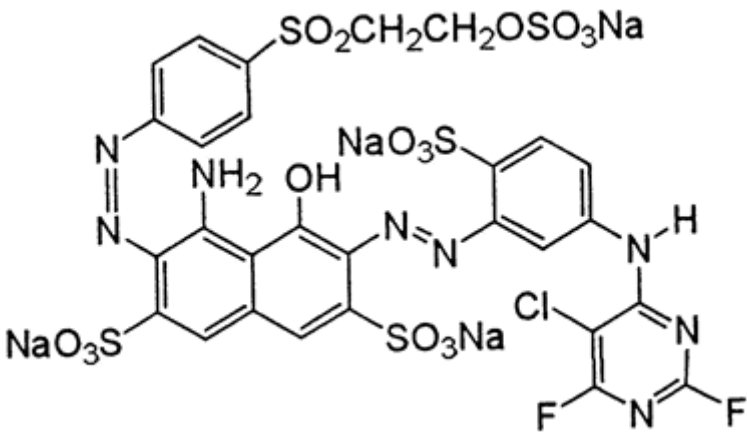
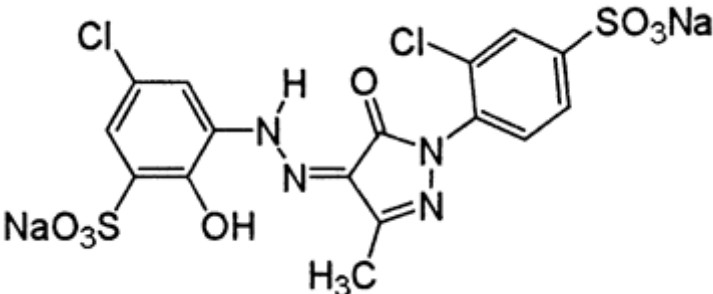
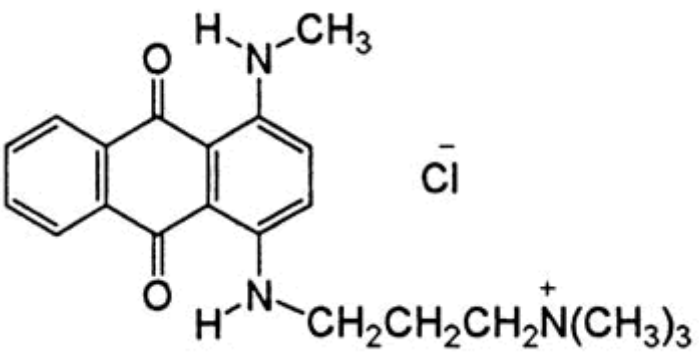
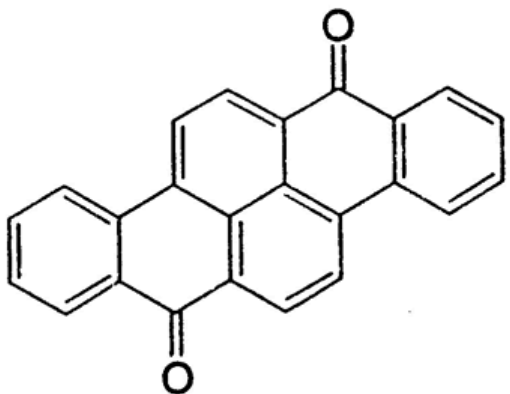
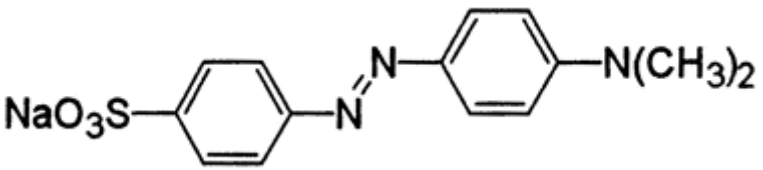
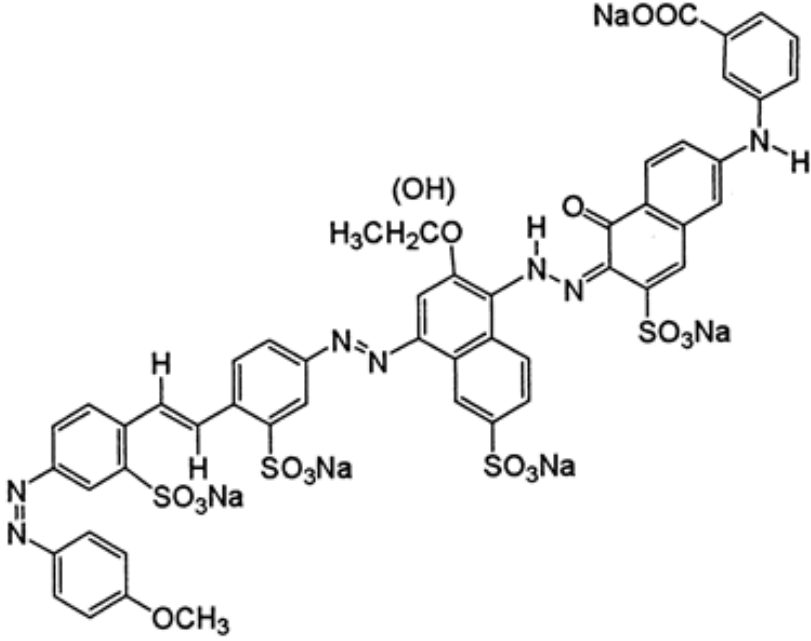
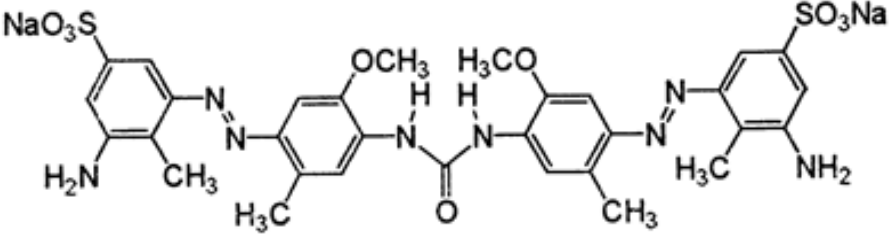
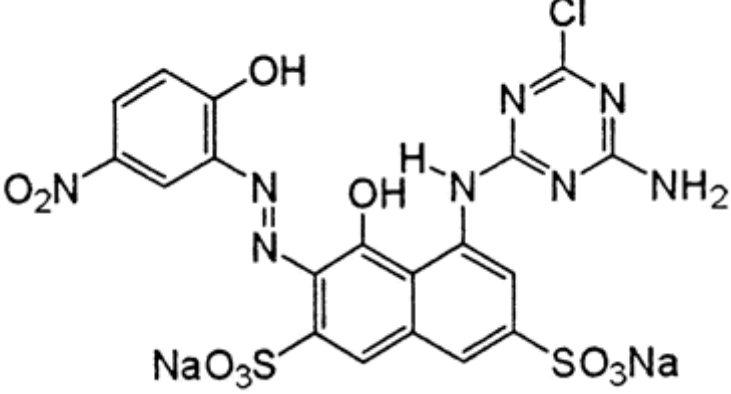
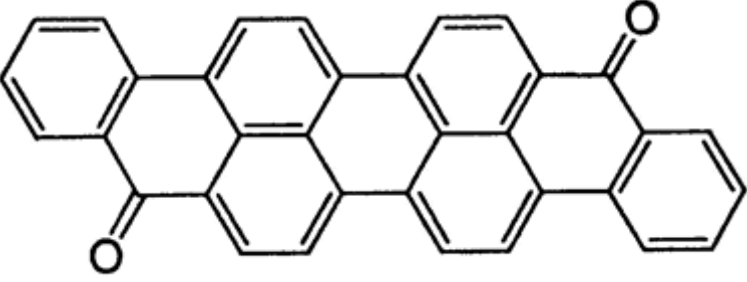
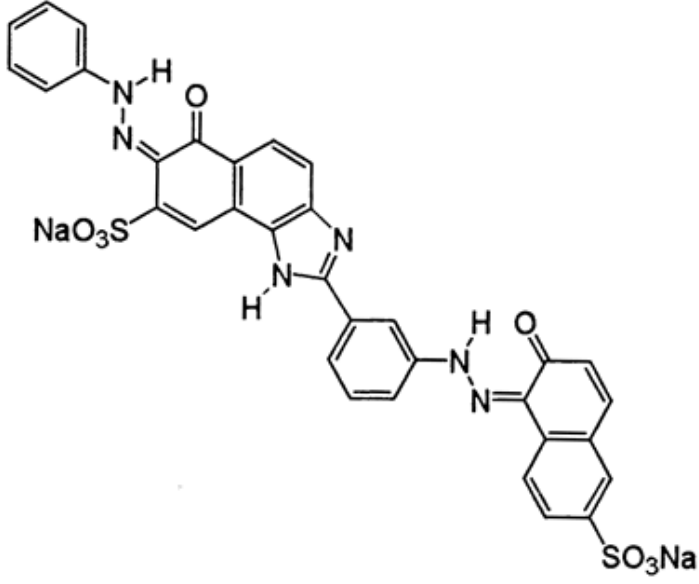
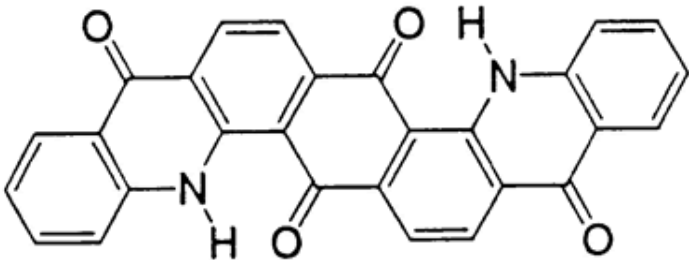
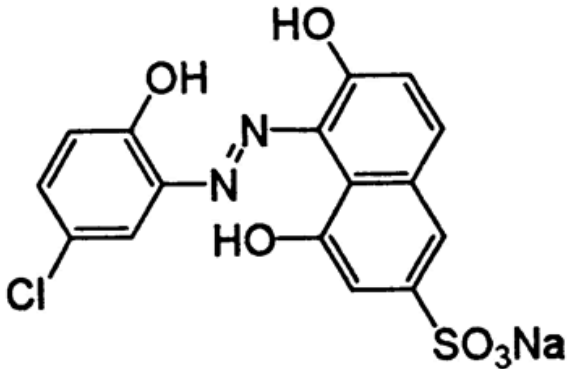
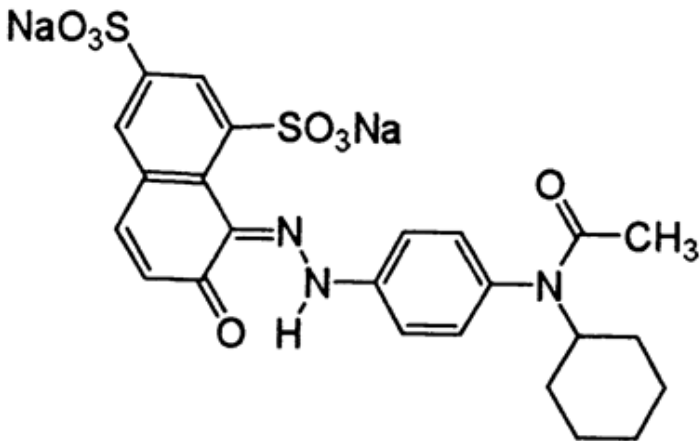
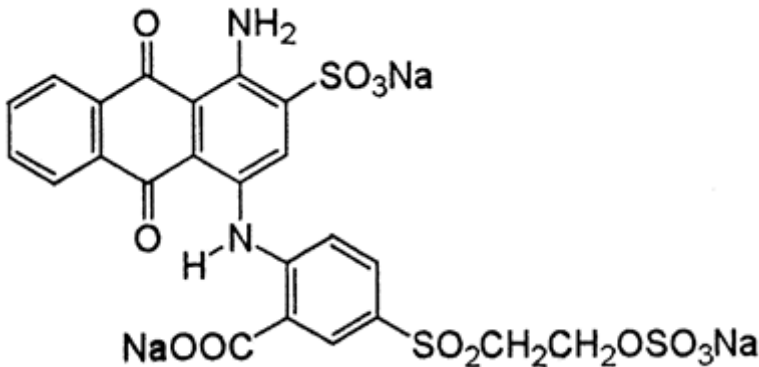


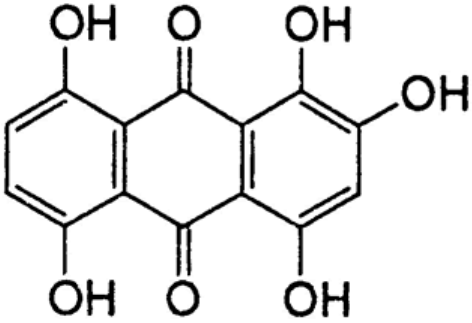
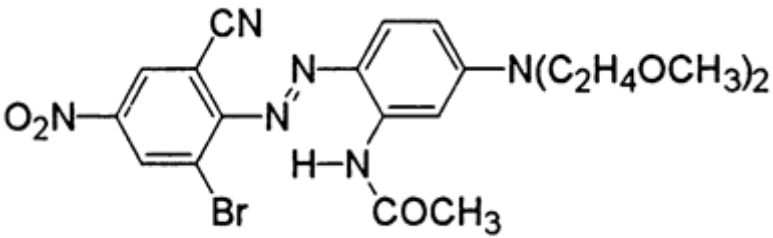
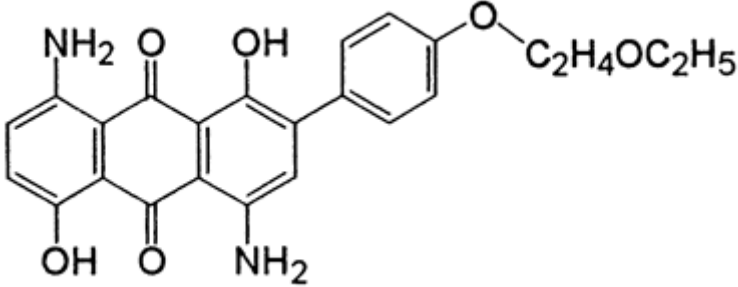
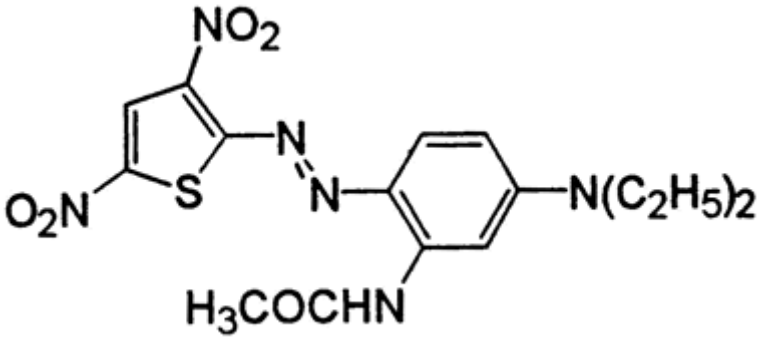
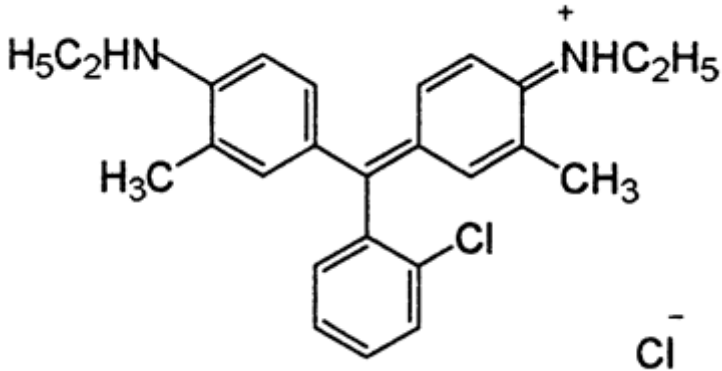
Dyestuff Recognition

	Basic Black 2
	Acid Yellow 29
	Reactive Blue 225
	Mordant Red 41

 Chemical structure of Basic Blue 22, a triphenylmethane dye. It features a central carbon atom bonded to three phenyl rings. One ring has a methylamino group (-NHCH₃), another has a trimethylammonium group (-N⁺(CH₃)₃CH₂CH₂CH₂), and the third is a phenyl ring. A chloride ion (Cl⁻) is shown as the counterion.	Basic Blue 22
 Chemical structure of Vat Yellow 4, a triphenylmethane dye. It consists of a central carbon atom bonded to three phenyl rings, with two of the rings having a carbonyl group (=O) at the para position.	Vat Yellow 4
 Chemical structure of Acid Orange 52, an azo dye. It consists of two phenyl rings connected by an azo group (-N=N-). One ring has a dimethylamino group (-N(CH₃)₂) at the para position, and the other has a sodium sulfonate group (-SO₃Na) at the para position.	Acid Orange 52
 Chemical structure of Direct Green 36, a complex triphenylmethane dye. It features a central carbon atom bonded to three phenyl rings. One ring has a dimethylamino group (-N(CH₃)₂) at the para position. The other two rings are substituted with various groups including sulfonate groups (-SO₃Na), a hydroxyl group (-OH), a hydroxyethyl group (-CH₂CH₂OH), and a sodium carboxylate group (-COONa).	Direct Green 36

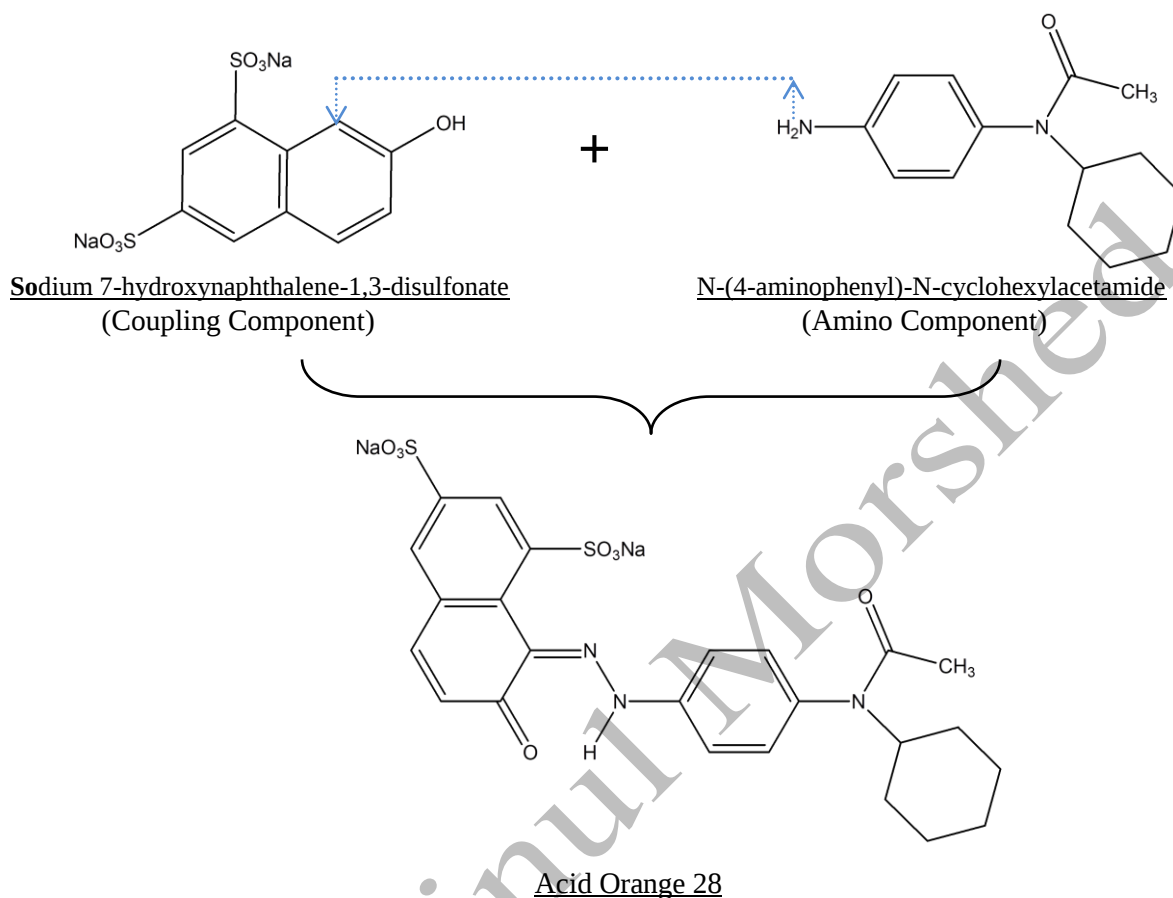
 The structure of Direct Brown 126 is a symmetrical azo dye. It features two 4-amino-2-methylphenyl rings connected by an azo group (-N=N-). Each phenyl ring is also substituted with a sodium sulfonate group (-SO₃Na) at the 6-position. The central azo group is linked to a central benzene ring that has a methoxy group (-OCH₃) at the 4-position and a methyl group (-CH₃) at the 2-position. This central benzene ring is further connected to a central amide group (-NH-CO-NH-) which is substituted with a methoxy group (-OCH₃) at the 4-position and a methyl group (-CH₃) at the 2-position.	Direct Brown 126
 The structure of Reactive Black 8 is a complex triphenylmethane dye. It consists of a central triphenylmethane core. One of the phenyl rings is substituted with a hydroxyl group (-OH) at the 4-position and a sodium sulfonate group (-SO₃Na) at the 2-position. Another phenyl ring is substituted with a hydroxyl group (-OH) at the 4-position and a sodium sulfonate group (-SO₃Na) at the 2-position. The third phenyl ring is substituted with a hydroxyl group (-OH) at the 4-position and a sodium sulfonate group (-SO₃Na) at the 2-position. The central carbon atom is also bonded to a 4-amino-2-chlorophenyl ring.	Reactive Black 8
 The structure of Vat Violet 10 is a large, symmetrical polycyclic dye. It features a central benzene ring that is fused to two naphthalene rings, which are in turn fused to two phenanthrene rings. The structure is highly symmetrical and contains multiple fused aromatic rings.	Vat Violet 10
 The structure of Direct Red 6 is a complex triphenylmethane dye. It consists of a central triphenylmethane core. One of the phenyl rings is substituted with a hydroxyl group (-OH) at the 4-position and a sodium sulfonate group (-SO₃Na) at the 2-position. Another phenyl ring is substituted with a hydroxyl group (-OH) at the 4-position and a sodium sulfonate group (-SO₃Na) at the 2-position. The third phenyl ring is substituted with a hydroxyl group (-OH) at the 4-position and a sodium sulfonate group (-SO₃Na) at the 2-position. The central carbon atom is also bonded to a 4-amino-2-chlorophenyl ring.	Direct Red 6

	Vat Violet 13
	Mordant Black 56
	Acid Orange 28
	Reactive Blue 27

	Mordant Blue 50
	Disperse Blue 257
	Disperse Blue 214
	Disperse Green 9
	Basic Blue 5

Synthesis Process of Azo Dye

Synthesis of Acid Orange 28



Reaction process:

“N-(4-aminophenyl)-N-cyclohexylacetamide” is a “di-azonium salt (Amino component)” and “Sodium 7-hydroxynaphthalene-1,3-disulfonate” is the coupling component. During the reaction the amino component makes bond with the “C (10)*” atom of coupling component to produce above Acid Orange 28 Dye.

The amino component makes bond with “C (10)*” atom because that atom is more polaric than other 3 carbon atoms. The range of their charges are given below---

Charges:

C(3) = 0.08635

C(5) = - 0.07400

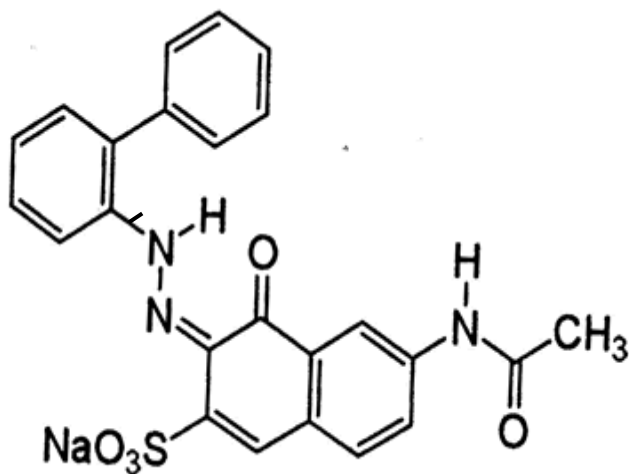
C(7) = - 0.11436

C(8) = -0.21106

C(10) = - 0.31250*

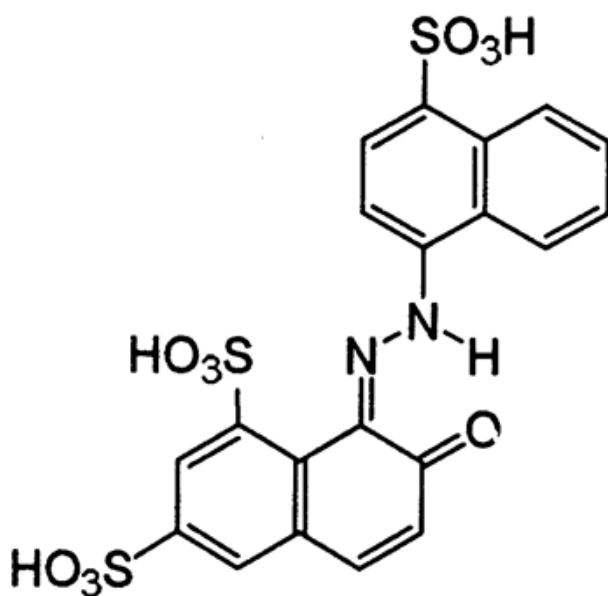
Effect of Functional Groups on Dyestuffs

Acid Red 15:



Name: C.I. Acid Red 15, C.I. 17930
Mol. Formula: C₂₄H₁₈N₃NaO₅S
Mol. Wt.: 483.47
CLogP: -3.26772
Wash fastness: 3-4 (AATCC)*

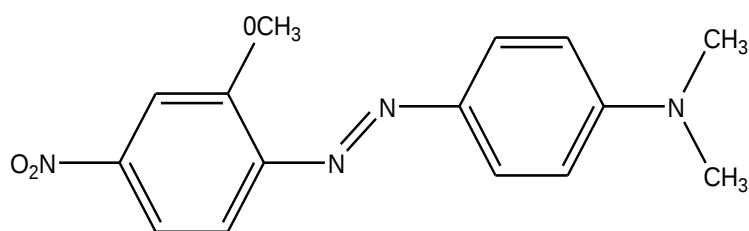
Acid Red 18:



Name: C.I. Acid Red 18, C.I. 16255
Mol. Formula: C₂₀H₁₁N₂Na₃O₁₀S₃
Mol. Wt.: 604.48
CLogP: -3.307
Wash fastness: 2 (AATCC)*

From the above two dye structures we have found that Acid Red 15 has better wash fastness than Acid Red 18. Acid Red 15 has only one sulphonate group in its structure but Acid Red 18 has three Sulphonate groups. We know that sulphonate group is highly solubilizing group i.e. highly hydrophilic group. That's why Acid Red 15 is more hydrophobic than Acid Red 18 and for acid dye we also know that, **Hydrophobic Acid dyes have good wash fastness property than the hydrophilic Acid dyes. For that hydrophobic property Acid Dye 15 has good wash fastness than Acid Dye 18.**

Disperse Red 41:



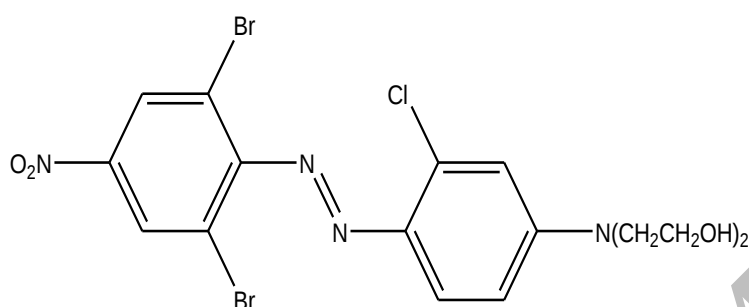
Name: C.I. Disperse Red 41, C.I. 11040

Mol. Formula: C₁₅H₁₆N₄O₃

Mol. Wt.: 300.31

Light fastness: 4-5 (ISO)*

Disperse Red 118:



Name: C.I. Disperse Red 118, C.I. 11152:2

Mol. Formula: C₁₆H₁₆Br₂ClN₄O₄

Mol. Wt.: 552.58

Light fastness: 6-7 (ISO)*

From the above two disperse dye structures we have found that Disperse Red 118 has better light fastness than Disperse Red 41. **Disperse Red 118 has electron withdrawing groups in ortho positions but Disperse Red 41 has electron donating groups in ortho position.** We know that **if disperse dye consists electron withdrawing groups in ortho position then light fastness improves; but if it consists electron donating groups in ortho position then light fastness decreases.** For why, Disperse Red 118 has good light fastness than Disperse Red 41.

---X---