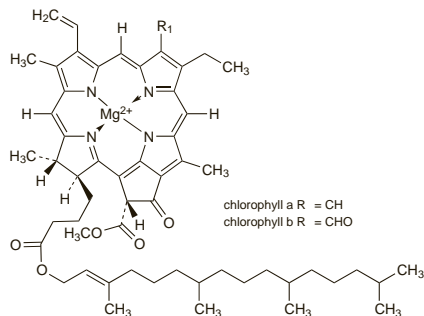


Chlorophyll

Cl Natural Green 3; Clorofila; Colour Index No. 75810; E140 (chlorophylls or chlorophyllins).

Хлорофилл

CAS — 479-61-8 (chlorophyll a); 519-62-0 (chlorophyll b).

**Chlorophyllin Copper Complex Sodium**

Clorofilina cúprica, complejo sódico de.

Медного Комплекса Хлорофиллина Натриевая Соль

Pharmacopoeias. In *US*.

USP 31 (Chlorophyllin Copper Complex Sodium). It contains sodium salts of copper-chelated chlorophyll derivatives, but no artificial colouring. Store in airtight containers. Protect from light.

Profile

Chlorophyll is a green photosynthetic pigment found in plants, algae, and cyanobacteria (blue-green algae). There are four closely related forms of chlorophyll. Chlorophyll a ($C_{55}H_{72}MgN_4O_5 = 893.5$) and chlorophyll b ($C_{55}H_{70}MgN_4O_6 = 907.5$) are found in plants and some types of algae; chlorophyll c, further subdivided into chlorophyll c1 ($C_{35}H_{30}MgN_4O_5 = 610.9$) and chlorophyll c2 ($C_{35}H_{28}MgN_4O_5 = 608.9$), is found in some types of algae; and chlorophyll d ($C_{54}H_{70}MgN_4O_6 = 895.5$) is found in some types of algae and in cyanobacteria.

Oil-soluble chlorophyll derivatives. Replacement of the magnesium atom in the chlorophylls by 2 hydrogen atoms using dilute mineral acids produces olive-green water-insoluble phaeophytins. Copper phaeophytins (sometimes called copper chlorophyll complex; E141) can be formed; these are more stable to acid and to light than the chlorophylls.

Water-soluble chlorophyll derivatives. When the chlorophylls are hydrolysed with alkali, phytol alcohol and methyl alcohol are split off and green water-soluble chlorophyllins are formed as the potassium or sodium salts. Similar water-soluble compounds can be prepared in which the magnesium is replaced by copper to give copper chlorophyllin complex (E141).

Chlorophylls and chlorophyllins, as well as the copper complexes of these compounds, are used mainly as colouring agents, in foods, medicines, and cosmetics.

Chlorophyll is used clinically, as an external application in the treatment of wounds and ulcers, and as a mouthwash. There is no clear evidence that it accelerates healing but it is considered to have a deodorant action. Chlorophyllin and copper chlorophyllin complex are used similarly. Chlorophyll is also used as a dietary supplement.

Preparations

Proprietary Preparations (details are given in Part 3)

USA: Chloresium; Derifil; Pals.

Multi-ingredient: **Arg.:** Fanaletas; Notoxin; Palan†; **Braz.:** Broncopinof†; Enoform Clorofila; Eucalip†an†; Mentozi†; Salimetin†; **Ger.:** Chlorophyl liquid "Schuh"†; Chlorophyllin Salbe "Schuh"†; Ginseng-Complex "Schuh"†; Stomasal Med†; **Hong Kong:** Epilon; **Indon.:** Methaphyllin; **Spain:** Odontocromil c Sulfamida†; Vitavox Pastillas†; **Thai.:** Sanaco†; **UK:** Chlorophyl†; **USA:** AllantEnzyme; AllantillEnzyme; Fresh-N-Free; Gladase-C; Panafil; Prophyllin; Wound Cleanser; Ziox.

CI Solvent Yellow 18

Cl Food Yellow 12; Colour Index No. 12740. 4-[(2,4-Dimethylphenyl)azo]-2,4-dihydro-5-methyl-2-phenyl-3H-pyrazol-3-one.

$C_{18}H_{18}N_4O = 306.4$.

CAS — 6407-78-9.

Profile

Cl Solvent Yellow 18 is a colouring agent used in contact lenses.

CI Vat Orange 1

Colour Index No. 59105. Dibromo-dibenzo (b,def) chryseno-7,14-dione.

Cl Кубовый Оранжевый 1

$C_{24}H_{10}Br_2O_2 = 490.1$.

CAS — 1324-11-4.

Profile

Cl Vat Orange 1 is a colouring agent used in contact lenses.

Citraxanthin

Citraxanthina; Elbli.

$C_{33}H_{44}O = 456.7$.

CAS — 3604-90-8.

Profile

Citraxanthin is a colouring agent used in animal feeds, to colour the fat of poultry and the egg-yolks of laying hens. It has vitamin A activity.

Citrus Red 2

Cl Solvent Red 80; Colour Index No. 12156. 1-(2,5-Dimethoxyphenylazo)-2-naphthol.

Цитрусовый Красный 2

$C_{18}H_{16}N_2O_3 = 308.3$.

CAS — 6358-53-8.

Profile

Citrus Red 2 is a colouring agent used in foods.

Cochineal

Cl Natural Red 4; Coccionella; Coccus; Coccus Cacti; Cochinilla; Colour Index No. 75470; E120.

КОШЕНИЛЬ

CAS — 1343-78-8.

Pharmacopoeias. In *Br*:

BP 2008 (Cochineal). The dried female insect, *Dactylopius coccus* containing eggs and larvae. It has a characteristic odour. It complies with a test for contamination with *Escherichia coli* and salmonellae.

Profile

Cochineal, which is a source of carmine, is used as a red colouring agent in food, medicines, and cosmetics.

There have been reports of sensitivity reactions including anaphylaxis, after use of products containing cochineal (see Hypersensitivity in Carmine, p.1470).

Homeopathy. Cochineal has been used in homeopathic medicines under the following names: Coccus cacti; Dactylopius coccus; Coc. c.

Curcumin

Colour Index No. 75300; Curcumina; E100; Kurkum; Kurkumina; Turmeric Yellow. 1,7-Bis(4-hydroxy-3-methoxyphenyl)hepta-1,6-diene-3,5-dione.

Куркумин

$C_{21}H_{20}O_6 = 368.4$.

CAS — 458-37-7.

Profile

Curcumin is the main colouring component of turmeric (p.1473). It is used as a colouring agent for drugs, foodstuffs, and cosmetics. It is also thought to be responsible for many of the pharmacological properties for which turmeric is under investigation (see p.1473).

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: **India:** Well-Beeing†; **Ital.:** Depatoc.

Eosin

Cl Acid Red 87; Colour Index No. 45380; D & C Red No. 22; Eosin Y; Eosina; Éosine Disodique. The disodium salt of 2',4',5',7'-tetrabromofluorescein.

Эозин

$C_{20}H_4Br_4Na_2O_5 = 691.9$.

CAS — 548-26-5; 17372-87-1.

ATC — D08AX02.

ATC Vet — QD08AX02.

Pharmacopoeias. In *Fr*.

Profile

Eosin has been incorporated in solution-tablets to give a distinctive colour to solutions prepared from them. It is also used in cosmetics.

Eosin has been used as a topical antiseptic in nappy rash, burns and other skin conditions, although other drugs are usually preferred.

Adverse effects. Contact dermatitis to eosin was seen relatively frequently between the 1920s and 1940s when it was a common colour in lipsticks. Fewer reports of hypersensitivity have occurred since then: changing fashions in cosmetic colours have reduced use of eosin and, if used, a purer grade and lower concentrations are now usually employed. However, cases of dermatitis after topical application of antiseptic preparations containing eosin were noted in the 1980s and 1990s. One report¹ suggested that an impurity might be responsible but another² implicated eosin itself after patch tests were performed with various products and pure tetrabromofluorescein.

1. Tomb RR. Allergic contact dermatitis from eosin. *Contact Dermatitis* 1991; **24**: 27-9.
2. Koeh P, et al. Allergic contact dermatitis from purified eosin. *Contact Dermatitis* 1995; **32**: 92-5.

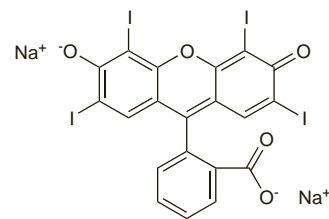
Erythrosine

Cl Food Red 14; Colour Index No. 45430; E127; Eritrosin BS; Eritrosina; Erythrosine BS; Erythrosine Sodium; FD & C Red No. 3. The monohydrate of the disodium salt of 2',4',5',7'-tetraiodo-fluorescein.

Эритрозин

$C_{20}H_6I_4Na_2O_5 \cdot H_2O = 897.9$.

CAS — 568-63-8 (anhydrous erythrosine sodium); 16423-68-0 (anhydrous erythrosine sodium); 49746-10-3 (erythrosine sodium monohydrate).



(anhydrous erythrosine sodium)

Profile

Erythrosine is used as a colouring agent for medicines, foods, and cosmetics. It is also used as a disclosing agent for plaque on teeth.

◇ Although early *animal* studies had indicated that erythrosine might have an adverse effect on the thyroid gland, a review¹ of the evidence and later studies, suggested that erythrosine was not genotoxic or mutagenic and was suitable for use as a food colour. Similarly, no evidence was found to support restricting its use in pharmaceutical products.²

1. MAFF. Food advisory committee: final report on the review of the colouring matter in food regulations 1973. *FdAC/REP/4*. London: HMSO, 1987.
2. European Commission. Opinion on toxicological data on colouring agents for medicinal products: erythrosin, adopted by the Scientific Committee on Medicinal Products and Medical Devices on 21 October 1998. Available at: http://ec.europa.eu/health/ph_risk/committees/scmp/docshtml/scmp_out08_en.htm (accessed 04/07/08)

Preparations

Proprietary Preparations (details are given in Part 3)

Arg.: Revelplac; **Austral.:** Disclo-Get; Disclo-Tab; **UK:** Ceplac.

Multi-ingredient: **Arg.:** Revelplac 2001.

Ferric Oxide

Demir Oksitler; E172 (iron oxides or hydroxides); Hierro, óxido de.

Оксид Железа

CAS — 51274-00-1; 1309-37-1.

Pharmacopoeias. *Chin.* includes red, black, brown, purple, and yellow ferric oxide. *It.* includes both red and yellow ferric oxide. *USNF* allows the basic colours of red or yellow ferric oxide or mixtures of these.

USNF 26 (Ferric Oxide). A powder exhibiting two basic colours (red and yellow), or other shades produced on blending the basic colours. Insoluble in water and in organic solvents; dissolves in hydrochloric acid upon warming, a small amount of insoluble residue usually remaining.

Profile

Ferric oxide is used for colouring medicines, contact lenses, cosmetics, and foodstuffs.

Preparations

Proprietary Preparations (details are given in Part 3)

Multi-ingredient: **Port.:** Filter Oil Free†.