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COLOURING MATTER IN FOOD REGULATIONS

This version is out of date

Subsidiary  
1980/007

Regulations made under sections 6, 8 and 58.

COLOURING MATTER IN FOOD REGULATIONS

(LN. 1980/007)

3.1.1980

Amending enactments	Relevant current provisions	Commencement date
LN. 1987/040	rr. 2(1), 6(1), 9, 11(2), Sch. 1	1.8.1987

**1964-07**

## Food and Drugs

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### COLOURING MATTER IN FOOD REGULATIONS

*This version is out of date*

**Subsidiary  
1980/007**

#### ARRANGEMENT OF REGULATIONS

##### Regulation

1. Title.
2. Interpretation.
3. Exemptions.
4. Sale, etc., of food containing colouring matter.
5. Prohibition of the use of added colouring matter.
6. Inorganic and organic impurity limits for colouring matters and diluents.
7. Sale, advertisement and labelling of colouring matter.
8. Condemnation of food.
9. Penalties and enforcement.
10. Defences.
11. Application of various sections of the Act.
12. *Omitted.*

#### **SCHEDULE 1.**

#### **SCHEDULE 2.**

#### **SCHEDULE 3.**

#### **SCHEDULE 4.**

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## COLOURING MATTER IN FOOD REGULATIONS

This version is out of date

Subsidiary  
1980/007

### Title.

1. These regulations may be cited as the Colouring Matter in Food Regulations.

### Interpretation.

2.(1) In these regulations, unless the context otherwise requires—

“appropriate designation” means, as respects any permitted colouring matter or permitted diluent, a name or description or a name and description sufficiently specific, in each case, to indicate to an intending purchaser the true nature of the permitted colouring matter or permitted diluent to which it is applied;

“coffee” means the decorticated berries of coffee and includes any such berries which have been roasted or ground or roasted and ground;

“coffee product” means any dried or liquid extract of coffee, and coffee and chicory mixture, any dried or liquid extract of a coffee and chicory mixture, any coffee and fig mixture, or any dried or liquid extract of a coffee and fig mixture;

“container” includes any form of packaging of food for sale as a single item, whether by way of wholly or partly enclosing the food or by way of attaching the food to some other article, and in particular includes a wrapper or confining band;

“diluent” means any substance used to dilute or dissolve colouring matter intended for use in food for human Consumption;

“food” means food intended for sale for human consumption and includes drink, chewing gum and other products of a like nature and use, and articles and substances used as ingredients in the preparation of food or drink or of such products, but does not include—

- (a) water, live animals or birds,
- (b) fodder or feeding stuffs for animals, birds or fish, or
- (c) articles or substances used only as drugs;

“permitted colouring matter” means any colouring matter described in the table in, or paragraph 1 of, Part I of Schedule 1 which complies

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**COLOURING MATTER IN FOOD REGULATIONS****Subsidiary  
1980/007****This version is out of date**

with any specific purity criteria relating to that colouring matter specified in Part II of that Schedule and, so far as is not otherwise provided by any such specific purity criteria, with the general purity criteria specified in Part III of that Schedule, or any combination of two or more such colouring matters and (except in the definition of appropriate designation in this regulation, and in regulation 6 and in Schedules I and 4) shall be construed as including any permitted diluent combined with such colouring matter or combination of such colouring matters;

“permitted diluent” means any diluent described in Part I of Schedule 2 which complies with the general purity criteria specified in Part II of the Schedule or any permitted solvent which complies with the purity criteria specified in Part III of that Schedule and includes and combination of two or more such diluents or solvents or diluents and solvents;

“permitted solvent” has the meaning assigned to it by the Solvents in Food Regulations, 1987;

“processed”, in relation to any food, includes curing by smoking and any treatment or process resulting in a substantial change in the natural state of any food but does not include boning, paring, grinding, cutting, cleaning or trimming; and

“unprocessed” shall be construed accordingly;

“sell” includes offer or expose for sale or have in possession for sale, and “sale” and “sold” shall be construed accordingly;

“vegetables” includes pulses.

(2) Unless a contrary intention is expressed, all proportions mentioned in these regulations are proportions calculated by weight of the product as sold.

(3) All proportions and quantities of any colouring matter mentioned in these regulations are calculated on the pure colouring matter.

(4) Any reference in these regulations to a label borne on a container shall be construed as including a reference to any legible marking on the container however effected.

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## COLOURING MATTER IN FOOD REGULATIONS

This version is out of date

Subsidiary  
1980/007

(5) For the purposes of these regulations, the supply of food, otherwise than by sale, at, in or from any place where food is supplied in the course of a business shall be deemed to be a sale of that food.

### **Exemptions.**

3. The provisions of these regulations shall not apply to any food having any colouring matter in it or on it, to any colouring matter or to any diluent combined with any colouring matter or colouring matters which, in each case, is intended at the time of sale, consignment, delivery or importation, as the case may be—

- (a) for exportation to any place outside Gibraltar; or
- (b) for the purpose of scientific laboratory testing, if the container of any such food, colouring matter or diluent bears a label stating clearly that such food, colouring matter or diluent, as the case may be, is sold, consigned, delivered or imported, as the case may be, only for such purpose.

### **Sale, etc., of food containing colouring matter.**

4.(1) Subject to subregulation (3) no food sold, consigned, delivered or imported into Gibraltar shall have in it or on it any colouring matter other than a permitted colouring matter.

(2) Subject to subregulation (3) no food sold, consigned, delivered or imported into Gibraltar shall have in it or on it any mark, however effected, in any colouring matter other than a permitted colouring matter.

(3) Save as hereinafter provided, no food sold, consigned, delivered or imported into Gibraltar shall have in it or on it any permitted colouring matter specified in column 2 of Schedule 3:

Provided that any food specified in column I of that Schedule may have in it or on it any such permitted colouring matter specified in relation thereto in column 2 thereof subject to any restriction on use specified in relation thereto in column 3 thereof.

(4) No person shall sell, consign, deliver or import into Gibraltar any food which does not comply with this regulation.

### **Prohibition of the use of added colouring matter.**

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**COLOURING MATTER IN FOOD REGULATIONS**

This version is out of date

**Subsidiary  
1980/007**

5.(1) Save as hereinafter provided, no meat, game, poultry, fish, fruit or vegetables, in a raw or unprocessed state, sold, consigned, delivered or imported into Gibraltar for human consumption, shall have in it or on it (otherwise than for the purpose of marking) any added colouring matter:

Provided that the husk containing any nut may have in it or on it added permitted colouring matter.

(2) No tea (whether in leaf or essence form), coffee, coffee product, condensed milk or dried milk, sold, consigned, delivered or imported into Gibraltar for human consumption shall have in it or on it any added colouring matter.

(3) No person shall sell, consign, deliver or import into Gibraltar any food which does not comply with this regulation.

**Inorganic and organic impurity limits for colouring matters and diluents.**

6.(1) No permitted colouring matter sold, consigned, delivered or imported into Gibraltar for use as an ingredient in the preparation of food and no permitted diluent combined with any such permitted colouring matter shall contain any inorganic or organic impurity specified in Part II or Part III, as the case may be, of Schedule 1 in relation to such permitted colouring matter or in Part II or Part III, as the case may be, of Schedule 2 in relation to such permitted diluent in excess of the amount therein prescribed for such impurity:

Provided that the maximum amount of any inorganic or organic impurity that may be contained in a combination of permitted colouring matters or of a permitted colouring matter or permitted colouring matters with a permitted diluent or permitted diluents shall be determined by multiplying the maximum amount of that impurity specified in Part II or Part III of Schedule 1 in relation to each permitted colouring matter or in Part II or Part III of Schedule 2 in relation to each permitted diluent, which in either case is contained in that combination, by the proportion of the total amount of such combination represented by that colouring matter or diluent and by adding together the products resulting therefrom.

(2) No person shall sell, consign, deliver or import into Gibraltar any permitted colouring matter or permitted diluent combined with any permitted colouring matter which does not comply with this regulation.

**Sale, advertisement and labelling of colouring matter.**

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## COLOURING MATTER IN FOOD REGULATIONS

This version is out of date

Subsidiary  
1980/007

7.(1) No person shall sell, consign, deliver, import into Gibraltar or advertise for sale any colouring matter for use as an ingredient in the preparation of food unless such colouring matter is a permitted colouring matter.

(2) No person shall sell, consign or deliver any permitted colouring matter for use as an ingredient in the preparation of food except in a container bearing a label which complies with the requirements specified in Schedule 4.

### **Condemnation of food.**

8. Where any food is certified by a public analyst as being food which it is an offence against regulation 4 or 5 to sell, consign, deliver or import into Gibraltar, that food may be treated for the purposes of section 10 of the Act (under which food may be seized and destroyed on the order of a justice of the peace) as being unfit for human consumption.

### **Penalties.**

9. If any person contravenes or fails to comply with any of the foregoing provisions of these regulations he shall be guilty of an offence and liable on summary conviction to a fine not exceeding £1,000.

### **Defences.**

10. (1) In any proceedings for an offence against these regulations in relation to the publication of an advertisement, it shall be a defence for the defendant to prove that, being a person whose business it is to publish or arrange for the publication of advertisements, he received the advertisement for publication in the ordinary course of business.

(2) In any proceedings against the manufacturer or importer of any colouring matter for use as an ingredient in the preparation of food, or of any food having colouring matter in or on it, for an offence against these regulations in relation to the publication of an advertisement, it shall rest on the defendant to prove that he did not publish, and was not a party to the publication of, the advertisement.

### **Application of various sections of the Act.**

11.(1) Sections 46(2) and (3)(which relate to prosecutions), 47(1) and (2)(which relate to evidence of analysis), 49 (which relates to the power of a court to require analysis by the Government Chemist in the United Kingdom), 50 (which relates to a contravention due to some person other

**1964-07**

## Food and Drugs

---

### COLOURING MATTER IN FOOD REGULATIONS

*This version is out of date*

**Subsidiary  
1980/007**

than the person charged), 51(2)(which relates to the conditions under which a warranty may be pleaded as a defence) and 52 (which relates to offences in relation to warranties and certificates of analysis) of the Act shall apply for the purposes of these regulations as 7 references therein to proceedings, or a prosecution, under or taken or brought under the Act included references to proceedings, or a prosecution, as the case may be, taken or brought for an offence under these regulations and as if the reference in the said section 49 to subsection (3) of section 46 included a reference to that subsection as applied by these regulations.

#### **Revocation.**

12. *Omitted.*



## COLOURING MATTER IN FOOD REGULATIONS

This version is out of date

Subsidiary  
1980/007

## SCHEDULE 1.

Regulations 2(1) and 6.

PART I.  
PERMITTED COLOURING MATTER.

Column 1	Column 2	Column 3	Column 4
Name of Colour	Serial Number	Colour Index (1971) number	Systematic Name or Description
Curcumin	E 100	75300	1,7-di-(4-hydroxy-3-methoxyphenyl)hepta-1,6-diene-1,5-dione
Riboflavin or Lactoflavin	E 101	–	7,8-Dimethyl-10-(D-riboityl)isoalloxazine
Riboflavin-5' – Phosphate	–	–	Riboflavin-5' – (Sodium Phosphate)
Tartrazine	E 102	19140	<i>tri</i> Sodium 5-hydroxy-1-(4-sulphophenyl)-4-(4-sulphophenylazo)pyrazole-3-carboxylate
Quinoline Yellow	E 104	47005	sodium salt of a mixture of the mono- and disulphonic acids (mainly the latter) of quinophthalone or 2-(2-quinoly) indanedione
Yellow 2G	–	18965	<i>di</i> Sodium 2,5-dichloro-4-(5-hydroxy-3-methyl-4-(4-sulphophenylazo)pyrazol-1-yl)benzene-sulphonate
Sunset Yellow FCF or orange Yellow S	E 110	15985	<i>di</i> Sodium 6-hydroxy-5-(4-sulphophenylazo) naphthalene-2-sulphonate
Cochineal or Carminic acid	E 120	75470	extract of <i>Coccus cacti</i> (Ammonium salts are included)
Carmoisine or Azorubine	E 122	14720	<i>di</i> Sodium 4-hydroxy-3-(4-sulpha-J-naphthylazo)naphthalene-1-sulphonate
Amaranth	E 123	16185	<i>tri</i> Sodium 3-hydroxy-4-(4-

## COLOURING MATTER IN FOOD REGULATIONS

This version is out of date

Subsidiary  
1980/007

			sulpha-1-naphthylazo)naphthalene-2,7-disulphonate
Ponceau 4R or Cochineal Red A	E 124	16255	<i>tri</i> Sodium 7-hydroxy-8-(4-sulpho-1-naphthylazo)naphthalene-1,3-disulphonate
Erythrosine BS	E 127	45430	<i>di</i> Sodium salt of 2,4,5,7-tetraiodofluorescein (xanthene numbering)
Red 2G	–	18050	<i>di</i> Sodium 5-acetamido-4-hydroxy-3-phenylazonaphthalene-2,7-disulphonate
Patent Blue V	E 131	42051	Calcium di-4-[4-diethylammoniocyclohexa-2,5-dienylidene-(4-diethylaminophenyl)methyl]-6-hydroxybenzene-1,3-disulphonate
Indigo Carmine or Indigotine	E 132	73015	<i>di</i> Sodium 5,5'-indigotindisulphonate
Brilliant Blue FCF	–	42090	<i>di</i> Sodium 4',4''-di-( <i>N</i> -ethyl-3-sulphonatobenzylamino)triphenylmethylmethyl-2-sulphonate
Chlorophyll	E 140	75810	<i>Chlorophyll a</i> : Phytol 4-ethyl-3-methoxy-carbonyl-1,3,5,8-tetramethyl-9-oxo-2-vinylphorb-7-propionate, magnesium complex <i>Chlorophyll b</i> : Phytol 4-ethyl-3-formyl-10-methoxycarbonyl-1,5,8-trimethyl-9-oxo-2-vinylphorb-7-propionate, magnesium complex
Copper complexes of chlorophyll and chlorophyllins	E 141	75810	copper chlorophyll complex and copper chlorophyllin complex
Green S or Acid Brilliant	E 142	44090	<i>mono</i> Sodium 4-[4-dimethylammoniocyclohexa-

COLOURING MATTER IN FOOD REGULATIONS

This version is out of date

Subsidiary  
1980/007

Green BS or Lissamine Green			2,5-dienylidene-(4-dimethylaminophenyl) methyl]-3-hydroxynaphthalene-2,7-disulphonate
Brown FK	–	–	mixture of the following components: (I) Sodium 2',4'-diaminoazobenzene - 4-sulphonate (II) Sodium 2',4'-diamino-5'-methylazobenzene - 4-sulphonate (III) <i>di</i> Sodium 4,4'-(4,6-diamino-1,3-phenylenebisazo) dibenzenesulphonate (IV) <i>di</i> Sodium 4,4'-(2,4-diamino-1,3-phenylenebisazo) dibenzenesulphonate (V) disodium 4,4'-(2,4-diamino-5-methyl-1,3-phenylenebisazo) dibenzenesulphonate (VI) trisodium 4,4',4'-(2,4-diaminobenzene - 1,3,5-triazo)tribenzenesulphonate
Chocolate Brown HT	–	20285	<i>di</i> Sodium 4,4'-(2,4-dihydroxy-5-hydroxy - methyl- 1,3-phenylenebisazo) <i>di</i> (naphthalene - 1 -sulphonate)
Caramel	E 150	–	products obtained exclusively by heating sucrose or other edible sugars; or water-soluble amorphous brown products, obtained by the controlled action of heat on edible sugars in the presence of one or more of the following chemical compounds: –acetic acid, citric acid, phosphoric acid, sulphuric acid, sulphurous acid or sulphur dioxide; –ammonium-, sodium-,

## COLOURING MATTER IN FOOD REGULATIONS

This version is out of date

Subsidiary  
1980/007

			potassium hydroxides or gaseous ammonia; ammonium-, sodium-, potassium carbonates, phosphates, sulphates or sulphites
Black PN or Brilliant Black BN	E 151	28440	<i>tetra</i> Sodium 4-acetamido-5-hydroxy-6-[7-sulpha-4-(4-sulphonhenylazo)-1-naphthylazo] naphthalene-1,7-disulphonate
Carbon black or Vegetable carbon	E 153	–	–
Carotenoids: alpha-carotene, beta-carotene, gamma-carotene,  annatto, bixin, norbixin	E 160 E 160 (a)  E 160 (b)	– 75130  75120	mainly in the <i>trans</i> forms  annatto includes bixin, the principal colouring of oil extracts of annatto, and norbixin, the alkaline salt of which is the principal colouring of aqueous extracts of annatto
capsanthin or capsorubin	E 160 (c)	–	paprika extract
lycopene	E 160 (d)	75125	mainly in the <i>trans</i> forms
beta-apo-8'-carotenal (C30)	E 160 (e)	40820	$\beta$ -8'-apocarotenal mainly in the <i>trans</i> forms
ethyl ester of beta-apo-8'-carotenoic acid (C30)	E 160 (f)	40825	ethyl $\beta$ -8'-apocarotenate mainly in the <i>trans</i> forms
Flavoxanthin	E 161 (a)	–	) the ketonic or hydroxylic derivatives or the ketonic and hydroxylic derivatives of carotenes
Lutein	E 161 (b)	–	
Cryptoxanthin	E 161 (c)	–	
Rubixanthin	E 161 (d)	75135	
Violaxanthin	E 161 (e)	–	
Rhodoxanthin	E 161 (f)	–	

COLOURING MATTER IN FOOD REGULATIONS

This version is out of date

Subsidiary  
1980/007

Canthaxanthin	E 161 (g)	40850	
Beetroot Red or Betanin	E 162	–	aqueous extract of red beetroots
Anthocyanin s	E 163	–	(a) those glycosides of 2-phenylbenzopyrylium salts which are anthocyanins; (b) the following anthocyanidin aglyconcs: pelargonidin; cyanidin; peonidin; delphinidin; petunidin; malvidin.
The following natural substances having a secondary colouring effect: (a) paprika (b) turmeric (c) saffron (d) sandalwood (e) the pure colouring principle of any of the colouring matters listed under (a) to (d) above	– – –	– 75300 75100 –	– – – –
Titanium dioxide	E 171	77891	–
Iron oxides and hydroxides	E 172	77489 77491 77492 77499	– – – –
COLOURING MATTERS FOR CERTAIN PURPOSES ONLY			
Aluminium Silver Gold Pigment Rubine or	E 173 E 174 E 175 E 180	77000 – 77480 15850	–   only the calcium and aluminium salts of 3- hydroxy4-(2-sulpho- <i>p</i>

## COLOURING MATTER IN FOOD REGULATIONS

Subsidiary  
1980/007

This version is out of date

Lithol Rubine BK			-tolylazo)-2-naphthoic acid
The synthetic equivalent identical with the pure colouring principle of any natural colouring matter described in this Part of this Schedule	—	—	—

1. Each colouring matter specified in column 1 of the above table shall, except where otherwise provided in any specific purity criteria in relation to that colouring matter in Part II of this Schedule and in the case of E 180 Pigment Rubine, include the acid form of the colouring matter and its sodium, calcium, potassium and aluminium salts (lakes).

**PART II.****SPECIFIC PURITY CRITERIA APPLICABLE TO  
PERMITTED COLOURING MATTER***E101 Riboflavin or Lactoflavin*

## 1. Limit test for lumiflavin (7,8,10-trimethylisoalloxazine):

The colour of the filtrate obtained by shaking 25mg of the colouring matter with 10 ml of ethanol-free chloroform for 5 minutes and filtering shall not be more intense than that of an aqueous solution obtained by diluting 3 ml of 0.1N potassium dichromate to 1,000ml.

2. The ethanol-free chloroform to which the preceding paragraph refers shall be prepared as follows: carefully shake 20ml of chloroform with 20 ml of water for 3 minutes and allow time to separate; draw off the chloroform layer and repeat the extraction twice using 20 ml each time; filter the chloroform through dry filter paper, shake the filtrate well for 5 minutes

## COLOURING MATTER IN FOOD REGULATIONS

This version is out of date

Subsidiary  
1980/007

with 5 g of powdered anhydrous sodium sulphate, leave the mixture to stand for 2 hours and decant or filter the clear chloroform.

## Riboflavin-5'-Phosphate

**Chemical description** Riboflavin-5'-phosphate (riboflavin-5sodium phosphate) consists primarily of the monosodium salt of the 5'-mono-phosphate ester of riboflavin. It also contains small amounts of unesterified riboflavin, other riboflavin phosphate esters and the disodium salt of riboflavin 5'-monophosphate ester.

**Structure of the major component**

**Description** Orange-yellow powder, practically odourless and with a less bitter taste in solution than unesterified riboflavin.

**Content** Not less than 70% and not more than 75% of total (free and esterified) riboflavin, calculated as riboflavin, determined by fluorescence at 460nm.

**Free riboflavin:** Not more than 6.0%.  
**Specific rotation  $[\alpha]_{20}^D$**  of material dried at 100°C for 5 hours in vacuo over phosphorus pentoxide Not less than +38° and not more than +42° using a 1.5% weight/volume solution in 20% weight/volume hydrochloric acid.

**Volatile matter** Not more than 8.0% after drying at 100°C for 5 hours in vacuo over phosphorus pentoxide.

**Inorganic phosphate** Not more than 1.0%, calculated as P<sub>04</sub>, on a volatile matter-free basis.

**Sulphated ash** Not more than 25%.

**pH of a 1% weight/l** Not less than 5.0 and not more than 6.5

volume solution

Lumiflavin Not more than 250mg per kg.«

*E102 Tartrazine* 1. The colouring matter shall not contain—

- (a) more than 0.2 per cent. of water-insoluble matter;
- (b) more than 1 per cent. of subsidiary colours.

*E 104 Quinolene Yellow*

1. The colouring matter shall not contain more than 0.2 per cent. of water-insoluble matter.

2. The quantities of 2-aminoazobenzene and 4-aminoazobenzene present in the colouring matter shall be determined by the following method:

dissolve 20 g of the colouring matter in 400 ml of water: and 5 ml of N sodium hydroxide, and shake 4 times with 50 ml of chlorobenzene in a separating funnel for 5 minutes, Wash the combined chlorobenzene extract with successive amounts of 400 ml of 0.1 N sodium hydroxide until the upper aqueous layer remains colourless. Filter the chlorobenzene solution through a thick folded filter. Concentrate 100 ml of the chlorobenzene extract to about 20 ml by heating on a water bath in a current of hot air; pour the concentrated solution on to a suitably activated alumina column of appropriate size; elute with chlorobenzene. The first 100 ml of the chlorobenzene eluate contains the 2-aminoazobenzene; elution of 4-aminoazobenzene follows thereafter. Make up a solution of each compound to 100 ml. Measure the extinction of the 2-aminoazobenzene ( $E_1$ ) and that of the 4-aminoazobenzene ( $E_2$ ) in a spectrophotometer against chlorobenzene contained in cells of suitable thickness ( $D_1$  and  $D_2$  cms respectively) at 414 nm and 376 nm respectively. Calculate the quantities of 2-aminoazobenzene and 4-aminoazobenzene present in the colouring matter, using the following formulae:

$$\begin{aligned} \text{2-aminoazobenzene content} &= \frac{E_1}{0.397} \times \frac{100}{d_1} \\ \text{(milligrams per kilogram)} \end{aligned}$$

$$\begin{aligned} \text{4-aminoazobenzene content} &= \frac{E_2}{1.10} \times \frac{100}{d_2} \\ \text{(milligrams per kilogram)} \end{aligned}$$

it being understood that:



## COLOURING MATTER IN FOOD REGULATIONS

This version is out of date

Subsidiary  
1980/007

1mg/ml  
E at 414 nm for 2-aminoazobenzene = 39.7  
1 cm

and

1mg/ml  
E at 376 nm for 4-aminoazobenzene = 110  
1 cm

3. The quantity of aniline present in the colouring matter shall be determined by the following method:

shake 75 ml of the residuum of the chlorobenzene extract, to which reference is made in the preceding paragraph, with 2 successive portions of 50 ml of 0.5N hydrochloric acid, then with 2 successive portions of 25 ml of water; neutralize the combined aqueous extracts with a 311 per cent. solution of sodium hydroxide and acidify with 10 ml of 0.5 N hydrochloric acid; dissolve 1-2 g of potassium bromide in this solution, After cooling in iced water add about 20 drops of 0.1 N sodium nitrite and allow to stand for 10 minutes; remove any excess of nitrite by adding sulphamic acid, Pour the solution into about 5 ml of a 3 per cent. solution of R Salt (disodium 3-hydroxy-naphthalene-2, 7-disulphonate) added to 10 ml of 2N sodium hydroxide; allow to stand for 15 minutes. Acidify the solution of the dyestuff with Congo Red as indicator, until the latter turns blue, and filter. The aminoazobenzene dyestuff will remain on the filter. Dilute the filtrate to 200 ml and measure its extinction ( $E_3$ ) in a spectrophotometer against chlorobenzene contained in cells of suitable thickness ( $d_3$  cms) at 490 nm. Calculate the quantity of aniline present in the colouring matter, using the following formula:

$$\text{aniline content} = E_3 \times 266$$

$$(\text{milligrams per kilogram}) \quad 2.26 \times d_3$$

it being understood that:

1 mg/ml

E at 490nm for aniline =226

1 cm

*Yellow 2G*

1. The colouring matter shall not contain—

- (a) more than 0.1 per cent. of water-insoluble matter;
- (b) more than 2 per cent. of subsidiary colours.

*E110 Sunset Yellow FCF or Orange Yellow S*

1. The colouring matter shall not contain more than 11.2 per cent. of water-insoluble matter.

*E 120 Cochineal or Carminic acid*

1. Using paper chromatography, the colouring matter shall give only a single spot in the alkaline zone with a solution of 2 g of trisodium citrate in 100ml of a 5 per cent. solution of ammonium hydroxide (ammonia solution).

*E 122 Carmoisine or Azorubine*

1. The colouring matter shall not contain—
- (a) more than 0.2 per cent, of water-insoluble matter;
  - (b) more than 1 per cent. of subsidiary colours.

*E 123 Amaranth*

1. The colouring matter shall not contain more than 0.2 per cent. of water-insoluble matter.

*E 124 Ponceau 4R or Cochineal Red A*

1. The colouring matter shall not contain more than 0.2 per cent. of water-insoluble matter.

*E 127 Erythrosine BS*

1. The colouring matter shall not contain—
- (a) more than 0.2 per cent. of water-insoluble matter;
  - (b) more than 3 per cent. of subsidiary colours;
  - (c) more than 1,000 milligrams per kilogram of mineral iodides (evaluated as sodium iodide).

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**COLOURING MATTER IN FOOD REGULATIONS**

This version is out of date

**Subsidiary  
1980/007**

*Red 2G*

In The colouring matter shall not contain—

- (a) more than 0.1 per cent. of water-insoluble matter;
- (b) more than 2 per cent. of subsidiary colours.

*E 131 Patent Blue V*

1. The colouring matter shall not contain—

- (a) more than 0.5 per cent. of water-insoluble matter;
- (b) more than 1 per cent. of subsidiary colours;
- (c) more than 20 milligrams per kilogram of chromium (expressed as Cr).

*E 132 Indigo Carmine or Indigotine*

1. The colouring matter shall not contain—

- (a) more than 0.2 per cent. of water-insoluble matter;
- (b) more than 1 per cent. of isatin-4(5 or 6 or 7) sulphonic acid;
- (c) more than 20 per *di* Sodium 5, 7<sup>1</sup>-indigotindisulphonate;
- (d) more than 1 per cent. of subsidiary colours other than that referred to in the preceding sub-paragraph.

*Brilliant Blue FCF*

1. The colouring matter shall not contain—

- (a) more than 0.2 per cent. of water-insoluble matter;
- (b) more than 7 per cent. of subsidiary colours;
- (c) more than 6 per cent. of the leuco base;
- (d) more than 0.35 per cent. of free aromatic amities;

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**COLOURING MATTER IN FOOD REGULATIONS**

*This version is out of date*

**Subsidiary  
1980/007**

- (e) more than 2 per cent. of synthetic intermediates other than free aromatic amines;
- (f) more than 0.4 per cent. of diethyl ether extract.

*E 141 Copper complexes of chlorophyll and chlorophyllins*

1. The colouring matter shall not contain more than 200 milligrams per kilogram of copper (free ionisable Cu).
2. A 1 per cent. solution of copper complex of chlorophyll in turpentine shall not be turbid and shall not give a sediment.

*E 142 Green S or Acid Brilliant Green BS or Lissamine Green*

1. The colouring matter shall not contain-
  - (a) more than 0.2 per cent of water-insoluble matter;
  - (b) more than 1 per cent. of subsidiary colours.

*Brown FK*

1. The colouring matter shall not contain
  - (a) more than 0.2 per cent. of water-insoluble matter;
  - (b) more than 5 per cent. of subsidiary colours;
  - (c) more than 0.5 per cent, of free aromatic amines (calculated as 1, 3-pheny lenediamine);
  - (d) more than 1 per cent, of synthetic intermediates other than free aromatic amines.
2. The colouring matter shall not contain more than the following proportions of the following components identified in column 4 of the table in Schedule 1 Part I:
  - (a) Component I: 26 per cent.;
  - (b) Component II: 17 per cent.;
  - (c) Component III: 17 per cent.;

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**COLOURING MATTER IN FOOD REGULATIONS**

This version is out of date

**Subsidiary  
1980/007**

- (d) Component IV: 16 per cent.;
- (e) Component V: 20 per cent.;
- (f) Component VI: 16 per cent.

*Chocolate Brown HT*

1. The colouring matter shall not contain—

- (a) more than 0.2 per cent. of water-insoluble matter;
- (b) more than 1 per cent. of synthetic intermediates other than free aromatic amines;
- (c) more than 15 per cent, of subsidiary colours.

2. Where any subsidiary colours are present, they shall consist principally of monosodium 4-( $\mu$ 2, 4-trihydroxy-m-tolylazo) naphthalene-1-sulphonate.

*E 150 Caramel*

1. The colouring matter shall not contain—

- (a) more than 0.5 per cent. of phosphates, expressed as  $P_2O_5$ ;
- (b) more than 0.5 per cent. of ammoniacal nitrogen.

2. The quantity of ammoniacal nitrogen referred to in the preceding subparagraph, and present in the colouring matter shall be determined according to the Tillmans-Mildner method, as follows:

Mix 5-10 g of the colouring matter with 300 ml of water and 1-2 g of MgO, and distill (To avoid foaming, a few drops of octyl alcohol, silicone, or a few drops of paraffin oil, or small pieces of paraffin, are added.) The duration of the distillation should be 35 minutes, of which 10 minutes is required for heating up and 25 minutes for the distillation. Absorb the volatile nitrogen compounds which are liberated in excess of 0. IN sulphuric acid. After back titration of the excess, the amount of nitrogen can be calculated using the following formula:

1 ml 0.1N sulphuric acid = 1.4 mg nitrogen.

3. The pH of the colouring matter shall be not less than 1.8.

*E 151 Black PN or Brilliant Black RN*

1. The colouring matter shall not contain—
  - (a) more than 0.2 per cent. of water-insoluble matter;
  - (b) more than 1 per cent, of synthetic intermediates;
  - (c) more than 15 per cent. of subsidiary colours.
2. Where any subsidiary colours are present, they shall consist principally of the diacetyl compound.

*E 153 Carbon Black or Vegetable Carbon «*

1. Limit test for residual higher aromatic hydrocarbons:

The extract obtained by extracting 1g of the colouring matter with 10g of pure cyclohexane for 2 hours shall not show any colour; in ultra-violet light it shall give practically no fluorescence; there shall be no residue on evaporation.

2. Limit test for tar products:

The filtrate obtained by boiling 2 g of the colouring matter with 20 ml of N sodium hydroxide and filtering shall be colourless.

*E 160a Beta-Carotene*

1. Using chromatography, by adsorption on alumina or silica gel, pure betacarotene shall give only one zone.

*E 106b Annatto, Bixin, Norbixin*

1. Annatto shall be identified according to the following method and criteria:
  - (a) Dissolve a sufficient quantity of annatto in benzene or sufficiently dilute a benzene solution of annatto to obtain a solution of the same colour as a 0.1 per cent. potassium dichromate solution. Pour 3 ml of the solution on the top of an alumina column: elute slowly. Wash the column three times with benzene. Bixin is very strongly absorbed on the surface of the alumina, forming a brilliant orange-red zone (which distinguishes it from crocetin). A very pale yellow zone usually moves very quickly down the column, even with pure

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**COLOURING MATTER IN FOOD REGULATIONS**

This version is out of date

Subsidiary  
1980/007

crystalline bixin. The bixin cannot be eluted with benzene, petroleum ether, chloroform, acetone, ethanol or methanol, but ethanol and methanol cause the orange colour to turn into an orange-yellow.

- (b) Proceed as described in the preceding sub-paragraph, then remove the benzene from the column by washing three times with chloroform previously dried with potassium carbonate. After elution of the last chloroform washing add 5 ml of Carr-Price reagent (antimony trichloride-a saturated solution in chloroform) at the top of the column. The bixin zone immediately turns blue/green (which distinguishes it from crocetin). This is known as the Carr-Price Reaction.

2. Bixin shall be identified according to the following method and criteria:

Dissolve 1-2 mg of crystalline bixin in 20 ml of chloroform. Add 5 ml of this solution to the top of a suitable alumina column. Rinse the solution with chloroform previously dried with sodium carbonate. After elution of the last chloroform washing add 5 ml of Carr-Price reagent at the top of the column. The bixin zone immediately turns blue/green.

3. Alkaline solutions of norbixin shall be identified according to the following method and criteria:

Place 2 ml of an aqueous annatto solution in a 50 ml separating funnel. Add a sufficient quantity of 2N sulphuric acid to obtain a strongly acid reaction. Norbixin separates as a red precipitate. Add 50 ml of benzene and shake vigorously. After separation, discard the aqueous layer and wash the benzene solution with 100 ml of water until the solution is no longer acid. Centrifuge the solution (usually emulsified) of norbixin in benzene for 10 minutes at 2,500 revolutions per minute. Decant the clear norbixin solution and dry with anhydrous sodium sulphate. Add 3-5 ml of this solution to the top of an alumina column. Norbixin, like bixin, forms an orange/red zone at the surface of the alumina. Treated by the elutants benzene, petroleum ether, chloroform, acetone, ethanol or methanol it behaves like bixin and also gives the Carr-Price reaction described in sub-paragraph (b) of paragraph 1 above.

*E 162 Beetroot Red or Betanin*

1. Using ascending paper chromatography, with butanol saturated with 2N hydrochloric acid as solvent, the colouring matter shall give a single red spot with a brownish trail and little migration.

*E 171 Titanium dioxide*

1. The weight of the residue obtained by the following method shall not exceed 0.0175 g.

Suspend 5 g of the colouring matter in 100 ml of 0.5N hydrochloric acid and heat for 30 minutes on a water bath, shaking occasionally. Filter through a Gooch crucible containing a filter bed which shall consist of three layers—the first, coarse asbestos; the second, filter paper reduced to a pulp; and the third, fine asbestos. Wash with three successive 10 ml portions of 0.5N hydrochloric acid. Evaporate the filtrate to dryness in a platinum evaporating dish and heat to a dull red until the weight of the residue is constant.

2. The colouring matter shall not contain—

- (a) more than 100 milligrams per kilogram of antimony;
- (b) more than 50 milligrams per kilogram of zinc;
- (c) more than 5 milligrams per kilogram of soluble barium compounds (expressed as Ba).

*E 172 Iron oxides and hydroxides*

1. The colouring matter shall not contain—

- (a) more than 1 milligram per kilogram of selenium;
- (b) more than 1 milligram per kilogram of mercury.

**PART III.****GENERAL PURITY CRITERIA APPLICABLE TO PERMITTED  
COLOURING MATTER EXCEPT WHERE OTHERWISE  
PROVIDED BY SPECIFIC PURITY CRITERIA***Inorganic impurities*

1. Each colouring matter shall not contain—

- (a) more than 5 milligrams per kilogram of arsenic;
- (b) more than 20 milligrams per kilogram of lead;



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COLOURING MATTER IN FOOD REGULATIONS

This version is out of date

Subsidiary  
1980/007

- (c) more than 100 milligrams per kilogram of any of the following substances, namely antimony, copper, chromium, zinc or barium sulphate, or more than 200 milligrams per kilogram of any combination of those substances.

*Organic impurities*

- 2. (1) Each synthetic organic colouring matter shall not contain—
  - (a) more than 0.01 per cent. of free aromatic amines;
  - (b) more than 0.5 per cent. of synthetic intermediates other than free aromatic amines;
  - (c) more than 4 per cent. of subsidiary colours such as isomers or homologues.
- (2) Each sulphonated organic colouring matter shall not contain more than 0.2 per cent. of any substance extractable by diethyl ether.

SCHEDULE 2.

Regulations 2(1) and 6

**PART I.  
PERMITTED DILLUENTS OTHER THAN PERMITTED  
SOLVENTS.**

Sodium carbonate  
Sodium hydrogen carbonate  
Sodium chloride  
Sodium sulphate  
Glucose  
Lactose  
Sucrose  
Dextrins  
Starches  
Sorbitol  
Edible oils and fats  
Beeswax  
Water  
Citric acid  
Tartaric acid  
Lactic acid  
Gelatin  
Pectins  
Ammonium, sodium or potassium alginates

Esters of L-ascorbic acid with straight-chain C14, C16 and C18 fatty acids, used exclusively with the colouring matters described in the table in Part I of Schedule I to these regulations in relation to the serial numbers E 160 and F 161 specified in column 2 thereof

Acetic acid  
Sodium hydroxide  
Ammonium hydroxide (ammonia solution)

**PART II.  
GENERAL PURITY CRITERIA APPLICABLE TO PERMITTED  
DILLUENTS OTHER THAN PERMITTED SOLVENTS.**

*Inorganic impurities*

Each diluent shall not contain—

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COLOURING MATTER IN FOOD REGULATIONS

This version is out of date

Subsidiary  
1980/007

- (a) more than 5 milligrams per kilogram of arsenic;
- (b) more than 20 milligrams per kilogram of lead;
- (c) more than 100 milligrams per kilogram of any of the following substances, namely antimony, copper, chromium, zinc or barium sulphate, or more than 200 milligrams per kilogram of any combination of those substances.

**PART III.**

**PURITY CRITERIA APPLICABLE TO PERMITTED SOLVENTS  
WHICH ARE PERMITTED DILUENTS.**

Each permitted solvent shall comply with the specification specified in relation thereto in Schedule 1 to the Solvents in Food Regulations, 1985, and so far as is not otherwise provided by that specification shall not contain—

- (a) more than 2 milligrams per kilogram of arsenic;
- (b) more than 10 milligrams per kilogram of lead;
- (c) more than 100 milligrams per kilogram of any of the following substances, namely antimony, copper, chromium, zinc or barium sulphate, or more than 200 milligrams per kilogram of any combination of those substances.

1964-07

## Food and Drugs

### COLOURING MATTER IN FOOD REGULATIONS

Subsidiary  
1980/007

This version is out of date

#### SCHEDULE 3.

Regulation 4

COLOURING MATTER PERMITTED ONLY IN CERTAIN FOODS.

Column 1	Column 2	Column 3
Food	Permitted colouring matter	Restriction on use
Dragees	Aluminium Silver Gold	For external colouring only
Sugar coated flour confectionery	Aluminium Silver Gold	For decoration only
Hard cheese	Pigment Rubine or Lithol Rubine BK	On the rind only
Raw or unprocessed meat	Methyl Violet	For markings only
Citrus fruit	Methyl Violet	For marking only

**SCHEDULE 4.**

Regulation 7

**LABELLING OF PERMITTED COLOURING MATTER  
AND PERMITTED DILUENTS.**

1. (1) Each container to which regulation 7 of these regulations applies shall bear a label on which is printed a true statement—

- (a) in respect of each permitted colouring matter present, of the serial number, if any, as specified in relation thereto in column 2 of the table in Part I of Schedule 1 to these regulations, and of the common or usual name or an appropriate designation of that permitted colouring matter; and
- (b) where any permitted diluent or diluents other than water is or are present, of the common or usual name or an appropriate designation of each such diluent;

and, if two or more such substances are present, the statement shall be in the form of a list in compliance with the following sub-paragraph.

(2) The list referred to in the preceding sub-paragraph shall, unless the quantity or proportion of each such substance is specified, be in the order of the proportion by weight which each such substance bears to the total contents of the container at the time of sale by the manufacturer, the common or usual name or appropriate designation of the substance present at that time in the greatest proportion by weight being listed first.

(3) The statement shall be headed or preceded by the words “food colour”.

2. Any statement required by the preceding paragraph—

- (a) shall be clear and legible;
- (b) shall be in a conspicuous position on the label which shall be marked on, or securely attached to, the container in such a manner that it will be readily discernible and easily read by an intending purchaser or consumer under normal conditions of purchase or use;

- (c) shall not be in any way hidden or obscured or reduced in conspicuousness by any other matter, whether pictorial or not, appearing on the label.

3. The figures and the letters in every word in any statement to which the preceding paragraph applies—

- (a) shall be in characters of uniform colour and size (being not less than 1.5 millimeters in height for a label on a container of which the greatest dimension does not exceed 12 centimeters, and not less than 3 millimeters in height for a label on a container of which the greatest dimension exceeds 12 centimeters), but so that the initial letter of any word may be taller than any other letter in the word;

- (b) shall appear on a contrasting ground, so however that where there is no ground other than such as is provided by a transparent container and the contents of that container are visible behind the letters, those contents shall be taken to be the ground for the purposes of this paragraph;

- (c) shall be within a surrounding line and no other written or pictorial matter shall appear within that line.

4. For the purposes of this Schedule—

- (a) the height of any lower case letter shall be taken to be the x height thereof, disregarding any ascender or descender thereof;
- (b) any requirement that figures or letters shall be of uniform height, colour or size, shall be construed as being subject to the saving that any inconsiderable variation in height, colour or size, as the case may be, may be disregarded.