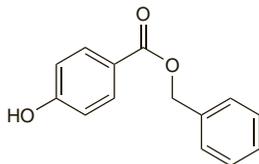


Benzyl Hydroxybenzoate

Benzyl Parahydroxybenzoate; Benzylparaben; Parahidroxibenzoato de bencilo. Benzyl 4-hydroxybenzoate.

$C_{14}H_{12}O_3 = 228.2$.
CAS — 94-18-8.

**Pharmacopoeias.** In *Br.* and *Int.*

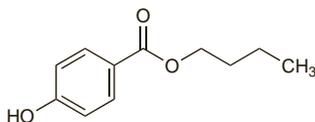
BP 2008 (Benzyl Hydroxybenzoate). A white to creamy-white, odourless or almost odourless, crystalline powder. Practically insoluble in water; freely soluble in alcohol and in ether. It dissolves in solutions of alkali hydroxides. M.p. about 112°.

Incompatibility and stability. The incompatibilities and stability of hydroxybenzoates are described under Sodium Propyl Hydroxybenzoate, below.

Butyl Hydroxybenzoate

Butilo parahidroksibenzoatas; Butilparabeno; Butil-parahidroxibenzoát; Butyl Parahydroxybenzoate; Butyle, parahydroxybenzoate de; Butylis parahydroxybenzoas; Butylis Paraoxybenzoas; Butylparaben; Butylparabenum; Butylparahydroxibensoat; Butylu parahidroksibenzoesan; Butyliparahidroksibensoatti. Butyl 4-hydroxybenzoate.

$C_{11}H_{14}O_3 = 194.2$.
CAS — 94-26-8.

**Pharmacopoeias.** In *Eur.* (see p.vii) and *Jpn.* Also in *USNF*.

Ph. Eur. 6.2 (Butyl Parahydroxybenzoate; Butyl Hydroxybenzoate BP 2008). Colourless crystals or a white or almost white crystalline powder. Very slightly soluble in water; freely soluble in alcohol and in methyl alcohol. M.p. 68° to 71°.

USNF 26 (Butylparaben). Small colourless crystals or a white powder. Very slightly soluble in water and in glycerol; freely soluble in alcohol, in acetone, in ether, and in propylene glycol. M.p. 68° to 71°.

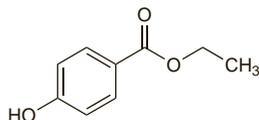
Incompatibility and stability. The incompatibilities and stability of hydroxybenzoates are described under Sodium Propyl Hydroxybenzoate, below.

Ethyl Hydroxybenzoate

Aethylum Hydroxybenzoicum; E214; Ethyl Parahydroxybenzoate; Éthyle, parahydroxybenzoate d'; Ethylis parahydroxybenzoas; Ethylis Paraoxybenzoas; Ethylparaben; Ethylparabenum; Etilo parahidroksibenzoatas; Etilparabeno; Etil-parahidroxibenzoát; Etylparahidroxibensoat; Etylu parahidroksibenzoesan; Etyliliparahidroksibensoatti. Ethyl 4-hydroxybenzoate.

$C_9H_{10}O_3 = 166.2$.
CAS — 120-47-8.

ATC — D01AE10.
ATC Vet — QD01AE10.

**Pharmacopoeias.** In *Chin.*, *Eur.* (see p.vii), *Int.*, and *Jpn.* Also in *USNF*.

Ph. Eur. 6.2 (Ethyl Parahydroxybenzoate; Ethyl Hydroxybenzoate BP 2008). Colourless crystals or a white or almost white crystalline powder. Very slightly soluble in water; freely soluble in alcohol and in methyl alcohol.

USNF 26 (Ethylparaben). Small colourless crystals or a white powder. Slightly soluble in water and in glycerol; freely soluble in alcohol, in acetone, in ether, and in propylene glycol.

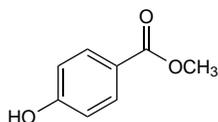
Incompatibility and stability. The incompatibilities and stability of hydroxybenzoates are described under Sodium Propyl Hydroxybenzoate, below.

The symbol † denotes a preparation no longer actively marketed

Methyl Hydroxybenzoate

E218; Metagin; Methyl Parahydroxybenzoate; Méthyle, parahydroxybenzoate de; Methylis Oxybenzoas; Methylis parahydroxybenzoas; Methylis Paraoxybenzoas; Methylparaben (*USAN*); Methylparabenum; Metilo parahidroksibenzoatas; Metilparabeno; Metil-parahidroxibenzoát; Metylparahydroxibensoat; Metylu parahidroksibenzoesan; Metyliparahidroksibensoatti. Methyl 4-hydroxybenzoate.

$C_8H_8O_3 = 152.1$.
CAS — 99-76-3.

**Pharmacopoeias.** In *Eur.* (see p.vii), *Int.*, and *Jpn.* Also in *USNF*.

Ph. Eur. 6.2 (Methyl Parahydroxybenzoate; Methyl Hydroxybenzoate BP 2008). Colourless crystals or a white or almost white crystalline powder. Very slightly soluble in water; freely soluble in alcohol and in methyl alcohol. M.p. 125° to 128°.

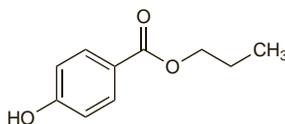
USNF 26 (Methylparaben). Colourless crystals or a white crystalline powder. Soluble 1 in 400 of water, 1 in 50 of water at 80°, 1 in 3 of alcohol, and 1 in 10 of ether; freely soluble in methyl alcohol. M.p. 125° to 128°.

Incompatibility and stability. The incompatibilities and stability of hydroxybenzoates are described under Sodium Propyl Hydroxybenzoate, below.

Propyl Hydroxybenzoate

E216; Propagin; Propilo parahidroksibenzoatas; Propilparabeno; Propil-parahidroxibenzoát; Propyl Parahydroxybenzoate; Propyle, parahydroxybenzoate de; Propylis Oxybenzoas; Propylis parahydroxybenzoas; Propylis Paraoxybenzoas; Propylparaben (*USAN*); Propylparabenum; Propylparahydroxibensoat; Propylu parahydroksibenzoesan; Propylu parahidroksibenzoesan; Propyliliparahidroksibensoatti. Propyl 4-hydroxybenzoate.

$C_{10}H_{12}O_3 = 180.2$.
CAS — 94-13-3.

**Pharmacopoeias.** In *Eur.* (see p.vii), *Int.*, and *Jpn.* Also in *USNF*.

Ph. Eur. 6.2 (Propyl Parahydroxybenzoate; Propyl Hydroxybenzoate BP 2008). A white or almost white, crystalline powder. Very slightly soluble in water; freely soluble in alcohol and in methyl alcohol. M.p. 96° to 99°.

USNF 26 (Propylparaben). Small colourless crystals or a white powder. Soluble 1 in 2500 of water, 1 in 400 of boiling water, 1 in 1.5 of alcohol, and 1 in 3 of ether. M.p. 96° to 99°.

Incompatibility and stability. The incompatibilities and stability of hydroxybenzoates are described under Sodium Propyl Hydroxybenzoate, below.

Sodium Butyl Hydroxybenzoate

Butilparabeno sódico; Sodium Butyl Parahydroxybenzoate; Sodium Butylparaben.

$C_{11}H_{13}NaO_3 = 216.2$.
CAS — 36457-20-2.

Pharmacopoeias. In *Br.*

BP 2008 (Sodium Butyl Hydroxybenzoate). A white, odourless or almost odourless, hygroscopic powder. Freely soluble in water and in alcohol. A 0.1% solution in water has a pH of 9.5 to 10.5.

Incompatibility and stability. The incompatibilities and stability of hydroxybenzoates are described under Sodium Propyl Hydroxybenzoate, below.

Sodium Ethyl Hydroxybenzoate

E215; Ethyl parahydroxybenzoate sodium; Éthyle (parahydroxybenzoate d') sodique; Ethylis Parahydroxybenzoas Natricum; Ethylis parahydroxybenzoas natricus; Ethylparaben sodná sůl; Etilo parahidroksibenzoato natrio druska; Etilparabeno sódico; Etylparahidroksibensoatnatrium; Etyliliparahidroksibensoatnatrium.

$C_9H_9NaO_3 = 188.2$.
CAS — 35285-68-8.

Pharmacopoeias. In *Eur.* (see p.vii).

Ph. Eur. 6.2 (Ethyl Parahydroxybenzoate Sodium; Ethyl Hydroxybenzoate Sodium BP 2008). A white or almost white, hygroscopic,

ic, crystalline powder. Freely soluble in water; soluble in dehydrated alcohol; practically insoluble in dichloromethane. A 0.1% solution in water has a pH of 9.5 to 10.5. Store in airtight containers.

The BP 2008 gives Ethylparaben Sodium as an approved synonym.

Incompatibility and stability. The incompatibilities and stability of hydroxybenzoates are described under Sodium Propyl Hydroxybenzoate, below.

Sodium Methyl Hydroxybenzoate

E219; Méthyle (parahydroxybenzoate de) sodique; Methylis Parahydroxybenzoas Natricum; Methylis parahydroxybenzoas natricus; Methylparaben Sodium (*USAN*); Methylparaben sodná sůl; Methylparabenum Natricum; Metilo parahidroksibenzoato natrio druska; Metilparabeno sódico; Metil-parahidroxibenzoát-nátrium; Natriummetylparahydroxibensoat; Natriummetyliparahidroksibensoatti; Sodium Methyl Parahydroxybenzoate; Sodium Methylparaben; Soluble Methyl Hydroxybenzoate.

$C_8H_7NaO_3 = 174.1$.
CAS — 5026-62-0.

Pharmacopoeias. In *Eur.* (see p.vii). Also in *USNF*.

Ph. Eur. 6.2 (Sodium Methyl Parahydroxybenzoate; Sodium Methyl Hydroxybenzoate BP 2008). A white or almost white, crystalline powder. Freely soluble in water; sparingly soluble in alcohol; practically insoluble in dichloromethane. A 0.1% solution in water has a pH of 9.5 to 10.5.

USNF 26 (Methylparaben Sodium). A white, hygroscopic, powder. Freely soluble in water; sparingly soluble in alcohol; insoluble in fixed oils. A 0.1% solution in water has a pH of 9.5 to 10.5. Store in airtight containers.

Incompatibility and stability. The incompatibilities and stability of hydroxybenzoates are described under Sodium Propyl Hydroxybenzoate, below.

Sodium Propyl Hydroxybenzoate

E217; Natriumpropylparahydroxibensoat; Natriumpropyliparahidroksibensoatti; Propilo parahidroksibenzoato natrio druska; Propilparabeno sódico; Propil-parahidroxibenzoát-nátrium; Propyle (parahydroxybenzoate de) sodique; Propylis Parahydroxybenzoas Natricum; Propylis parahydroxybenzoas natricus; Propylparaben Sodium (*USAN*); Propylparaben sodná sůl; Propylparabenum Natricum; Sodium Propyl Parahydroxybenzoate; Sodium Propylparaben; Soluble Propyl Hydroxybenzoate.

$C_{10}H_{11}NaO_3 = 202.2$.
CAS — 35285-69-9.

Pharmacopoeias. In *Eur.* (see p.vii). Also in *USNF*.

Ph. Eur. 6.2 (Sodium Propyl Parahydroxybenzoate; Sodium Propyl Hydroxybenzoate BP 2008). A white or almost white, crystalline powder. Freely soluble in water; sparingly soluble in alcohol; practically insoluble in dichloromethane. A 0.1% solution in water has a pH of 9.5 to 10.5.

USNF 26 (Propylparaben Sodium). A white, hygroscopic, odourless powder. Freely soluble in water; sparingly soluble in alcohol; insoluble in fixed oils. A 0.1% solution in water has a pH of 9.5 to 10.5. Store in airtight containers.

Incompatibility and stability. The activity of hydroxybenzoates can be adversely affected by the presence of other excipients or active ingredients. There may be adsorption onto substances like magnesium trisilicate, aluminium magnesium silicate, talc, polysorbate 80,¹² carmellose sodium,³ or plastics.⁴ Nonionic surfactants can reduce hydroxybenzoate activity,⁵ as may essential oils.⁶ Other incompatibilities that have been reported include atropine,⁷ iron,⁴ sorbitol,⁸ weak alkalis,⁴ and strong acids.⁴ Syrup preserved with hydroxybenzoates is incompatible with a range of compounds.^{9,10} Methyl hydroxybenzoate 0.1% was reported¹¹ to be a poor preservative in insulin preparations, especially soluble insulin preparations. Increasing heat or pH can reduce stability and activity;¹² freeze-drying may also lead to a loss of activity.¹³

1. Yousef RT, et al. Effect of some pharmaceutical materials on the bactericidal activities of preservatives. *Can J Pharm Sci* 1973; **8**: 54-6.
2. Allwood MC. The adsorption of esters of p-hydroxybenzoic acid by magnesium trisilicate. *Int J Pharmaceutics* 1982; **11**: 101-7.
3. Fawcett JP, et al. Binding of parabens to sodium carboxymethylcellulose in oral liquid formulations. *Aust J Hosp Pharm* 1996; **26**: 552-4.
4. Johnson R, Steer R. Methylparaben. In: Rowe RC, et al. eds. *Handbook of pharmaceutical excipients*. 5th ed. London and Chicago: The Pharmaceutical Press and the American Pharmaceutical Association, 2006: 466-70.
5. Yamaguchi M, et al. Antimicrobial activity of butylparaben in relation to its solubilization behavior by nonionic surfactants. *J Soc Cosmet Chem* 1982; **33**: 297-307.
6. Chemburkar PB, Joslin RS. Effect of flavoring oils on preservative concentrations in oral liquid dosage forms. *J Pharm Sci* 1975; **64**: 414-17.
7. Deeks T. Oral atropine sulphate mixtures. *Pharm J* 1983; **230**: 481.
8. Runesson B, Gustavii K. Stability of parabens in the presence of polyols. *Acta Pharm Suec* 1986; **23**: 151-62.
9. *PSGB Lab Report P/79/2* 1979.
10. *PSGB Lab Report P/80/1* 1980.

- Allwood MC. The effectiveness of preservatives in insulin injections. *Pharm J* 1982; **229**: 340.
- Sunderland VB, Watts DW. Kinetics of the degradation of methyl, ethyl and n-propyl 4-hydroxybenzoate esters in aqueous solution. *Int J Pharmaceutics* 1984; **19**: 1–15.
- Flora KP, et al. The loss of paraben preservatives during freeze drying. *J Pharm Pharmacol* 1980; **32**: 577–80.

Adverse Effects and Precautions

Hypersensitivity reactions occur with the hydroxybenzoates. Generally these are of the delayed type, appearing as contact dermatitis. Immediate reactions with urticaria and bronchospasm have occurred rarely.

Breast cancer. Some researchers¹ have questioned whether *p*-hydroxybenzoic acid esters, the most common preservatives found in body care cosmetic products, could increase the incidence of breast cancer in women. The esters have been shown to be oestrogenic *in vitro* and *in vivo* and have been detected in human breast tumour tissue, although a causal association cannot be confirmed.

- Harvey PW, Darbre P. Endocrine disruptors and human health: could oestrogenic chemicals in body care cosmetics adversely affect breast cancer incidence in women? *J Appl Toxicol* 2004; **24**: 167–76.

Hypersensitivity. Immediate hypersensitivity reactions such as urticaria and bronchospasm with generalised pruritus, have been reported rarely on injection of preparations containing hydroxybenzoates.^{1,2} Delayed contact dermatitis occurs more frequently, usually after use of topical medications, but has also occurred after use of an ester or of *p*-hydroxybenzoic acid in oral preparations.³ Hypersensitivity reactions have also been reported in patients given local anaesthetics containing hydroxybenzoates^{4,5} and cross-reactions with other para-amino compounds including benzocaine, paraphenylenediamine, and sulfonamides have occurred rarely.⁵

The incidence of sensitisation to hydroxybenzoates ranges from 0 to 3.5% but has tended to stay relatively constant over time.⁵ A report from the North American Contact Dermatitis Group⁶ in 1972 provided an incidence of 3%, while another later review⁷ of a large number of patients gave an incidence of 2.2%. The Swiss Contact Dermatitis Research Group reported⁸ a sensitisation rate of 1.7% based on a one-year study from 1989 to 1990 in 2295 patients.

Subjects with healthy skin exposed to hydroxybenzoates, for example in cosmetics, are considered to have a much lower incidence of reactions than patients with eczema or skin trauma. Unusually, patients who have reacted to a hydroxybenzoate with a contact dermatitis appear to be able to apply that preservative to another unaffected site and yet not suffer a reaction; this has been termed the 'paraben paradox'.⁹

- Aldrete JA, Johnson DA. Allergy to local anaesthetics. *JAMA* 1969; **207**: 356–7.
- Nagel JE, et al. Paraben allergy. *JAMA* 1977; **237**: 1594–5.
- Kaminer Y, et al. Delayed hypersensitivity reaction to orally administered methylparaben. *Clin Pharm* 1982; **1**: 469–70.
- Lederman DA, et al. An unusual skin reaction following local anesthetic injection: review of the literature and report of four cases. *Oral Surg* 1980; **49**: 28–33.
- Sasseville D. Hypersensitivity to preservatives. *Dermatol Ther* 2004; **17**: 251–63.
- North American Contact Dermatitis Group. Epidemiology of contact dermatitis in North America 1972. *Arch Dermatol* 1973; **108**: 537–40.
- Moore J. Final report on the safety assessment of methylparaben, ethylparaben, propylparaben, and butylparaben. *J Am Coll Toxicol* 1984; **3**: 147–209.
- Perrenoud D, et al. Frequency of sensitization to 13 common preservatives in Switzerland. *Contact Dermatitis* 1994; **30**: 276–9.
- Fisher AA. Cortaid cream dermatitis and the "paraben paradox". *J Am Acad Dermatol* 1982; **6**: 116–7.

Neonates. An *in-vitro* study on serum from neonates with hyperbilirubinaemia indicated that methyl hydroxybenzoate at a concentration of 200 micrograms/mL of serum increased the concentration of free unconjugated bilirubin and interfered with the binding of bilirubin to serum proteins. Methyl hydroxybenzoate was present in an injection of gentamicin sulfate at a concentration of 1.3 to 1.8 mg/mL. Neither gentamicin nor propyl hydroxybenzoate had a significant effect on bilirubin.¹

- Loria CJ, et al. Effect of antibiotic formulations in serum protein: bilirubin interaction of newborn infants. *J Pediatr* 1976; **89**: 479–82.

Pharmacokinetics

Neonates. After intramuscular injection, methyl hydroxybenzoate present in a gentamicin preparation was excreted in the urine of preterm infants to a variable extent and mainly in the conjugated form.¹ *p*-Hydroxybenzoic acid was detected as a metabolite. The injection contained methyl hydroxybenzoate 3.6 mg, propyl hydroxybenzoate 400 micrograms, and gentamicin 80 mg. Propyl hydroxybenzoate was also detected in the urine samples.

- Hindmarsh KW, et al. Urinary excretion of methylparaben and its metabolites in preterm infants. *J Pharm Sci* 1983; **72**: 1039–41.

Uses

The hydroxybenzoate preservatives are alkyl esters of *p*-hydroxybenzoic acid with antibacterial and antifungal properties. They are more active against Gram-positive than against Gram-negative bacteria. They are active over a broad pH range (4 to 8), though are generally more active in acidic solutions. Activity increases with increasing alkyl chain length but aqueous solubility decreases, although this may be overcome by employing the more soluble sodium salts as long as the pH of the preparation is not increased. Activity may also be increased by combining two hydroxybenzoates with short alkyl chains. Another way of increasing activity is to use a hydroxybenzoate with propylene glycol.

Hydroxybenzoates are used as preservatives in pharmaceutical preparations in usual concentrations of up to 0.25%. Methyl hydroxybenzoate and propyl hydroxybenzoate are used together in some preparations. There have been reports of the hydroxybenzoates not being satisfactory preservatives for ophthalmic preparations because of their relative lack of efficacy against some Gram-negative bacteria, particularly *Pseudomonas aeruginosa*. The hydroxybenzoate preservatives are widely used in cosmetics and are also used for food preservation.

Hydroxybenzoates have been used in preparations promoted for the management of skin infections or pruritus.

Preparations

Proprietary Preparations (details are given in Part 3)

Fr.: Nisapulvol; Nisaseptol; Nisazol; **Malaysia:** Nisapulvol.

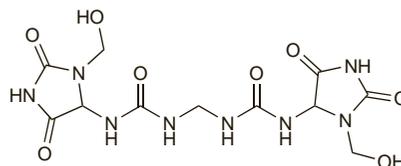
Multi-ingredient: **Austral:** Mycoderm; **Hong Kong:** Mycoderm†; **Malaysia:** Mycoderm; **Neth.:** Trachitol; **UK:** Brushitox; **Venez.:** Glizgen.

Imidurea

N,N'-Methylenbis[*N'*-(3-(hydroxymethyl)-2,5-dioxo-4-imidazolidinyl)urea].

$C_{11}H_{16}N_8O_8 = 388.3$.

CAS — 39236-46-9.



Pharmacopoeias. In *USNF*.

USNF 26 (Imidurea). A white odourless powder. Soluble in water and in glycerol; sparingly soluble in propylene glycol; insoluble in most organic solvents. A 1% solution in water has a pH of 6.0 to 7.5. Store in airtight containers.

Profile

Imidurea is used as an antimicrobial preservative in topical pharmaceutical and cosmetic preparations.

Iodoform

Iodoformo. Tri-iodomethane.

$CHI_3 = 393.7$.

CAS — 75-47-8.

ATC — D09AA13.

ATC Vet — QD09AA13.



Pharmacopoeias. In *Jpn* and *US*.

USP 31 (Iodoform). A lustrous greenish-yellow powder or lustrous crystals. It is slightly volatile at ordinary temperatures and distils slowly with steam. It decomposes at high temperatures emitting vapours of iodine. Practically insoluble in water; sparingly soluble in alcohol, in glycerol, and in olive oil; soluble in boiling alcohol; freely soluble in chloroform and in ether. Store in airtight containers at a temperature not exceeding 40°. Protect from light.

Profile

Iodoform slowly releases iodine (p.2169) when applied to the tissues and is used for its mild antiseptic action. Bismuth Subnitrate and Iodoform Paste (BPC 1954) (BIPP) has been applied to wounds and abscesses. Sterile gauze impregnated with the paste has also been used for packing cavities after oral and otorhinological surgery.

Adverse effects on the nervous system. Encephalopathy has been associated with the use of bismuth subnitrate and iodoform paste (BIPP) for the packing of wound cavities after ear, nose, and throat, oral, and maxillofacial surgery,^{1,2} although there is some debate as to whether the bismuth or the iodoform component is responsible.^{1–3} However, encephalopathy has been reported after application of iodoform gauze without bismuth.^{4,5} CNS toxicity due to both iodine and bismuth has been reported⁶ in an 86-year-old woman from an intra-oral plug of BIPP following partial maxillectomy. Five days after surgery the patient started to experience loss of appetite and lightheadedness, and by day 11 was suffering from fainting episodes, confusion, and paranoid ideation and was becoming increasingly aggressive. On day 14 the BIPP pack was removed; 7 days later the patient's condition improved and when discharged 5 days later she was alert and cooperative.

- Wilson APR. The dangers of BIPP. *Lancet* 1994; **344**: 1313–14.
- Youngman L, Harris S. BIPP madness; an iatrogenic cause of acute confusion. *Age Ageing* 2004; **33**: 406–7.
- Farrell RWR. Dangers of bismuth iodoform paraffin paste. *Lancet* 1994; **344**: 1637–8.
- Roy P-M, et al. Dangers of bismuth iodoform paraffin paste. *Lancet* 1994; **344**: 1708.
- Yamasaki K, et al. Delirium and a subclavian abscess. *Lancet* 1997; **350**: 1294.
- Harris RA, Poole A. Beware of bismuth: post maxillectomy delirium. *Aust N Z J Surg* 2002; **72**: 846–7.

Hypersensitivity. A retrospective analysis of 185 patients¹ who were treated with a bismuth-iodoform-paraffin paste (BIPP) impregnated ribbon gauze pack after ear surgery found the incidence of allergic reactions to be 5.9%. A fivefold increase risk of developing allergic reactions was also found in those with previous exposure to BIPP. Three cases of allergic contact otitis externa have been reported following the use of bismuth subnitrate and iodoform paste to pack the ear after surgery.²

- Lim PVH, et al. Hypersensitive allergic reactions to bismuth-iodoform-paraffin paste following ear surgery. *J Laryngol Otol* 1998; **112**: 335–7.
- Roest MAB, et al. Allergic contact otitis externa due to iodoform in BIPP cavity dressings. *Contact Dermatitis* 2002; **46**: 360.

Preparations

BPC 1954: Bismuth Subnitrate and Iodoform Paste; Compound Iodoform Paint.

Proprietary Preparations (details are given in Part 3)

Ger.: Jodoform†; Opraclean.

Multi-ingredient: **Arg.:** Aseptobron; **Ital.:** Pasta Iodoformica Radiopaca; **Spain:** Alvogil; **Switz.:** Alvogil; **UK:** OxBipp.

Isopropyl Alcohol

Alcohol isopropilico; Alcohol isopropylicus; Alkohol izopropilowy; Dimethyl Carbinol; Isopropanol; Isopropylalkohol; Isopropylque, alcool; Isopropylalkohol; Izopropil Alkol; Izopropil-alkohol; Izopropilo alkoholis; 2-Propanol; Secondary Propyl Alcohol. Propan-2-ol.

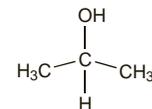
Изопропиловый Спирт

$(CH_3)_2CHOH = 60.10$.

CAS — 67-63-0.

ATC — D08AX05.

ATC Vet — QD08AX05.



Pharmacopoeias. In *Eur.* (see p.vii), *Int.*, *Jpn.* and *US*.

Ph. Eur. 6.2 (Isopropyl Alcohol). A clear colourless liquid. Miscible with water and with alcohol. Protect from light.

USP 31 (Isopropyl Alcohol). A transparent, colourless, mobile, volatile, flammable liquid with a characteristic odour. Miscible with water, with alcohol, with chloroform, and with ether. Store in airtight containers remote from heat.

Adverse Effects, Treatment, and Precautions

Isopropyl alcohol is considered to be more toxic than ethyl alcohol (p.1625), and the symptoms of intoxication appear to be similar, except that isopropyl alcohol has no initial euphoric action and gastritis, haemorrhage, pain, nausea, and vomiting are more prominent.