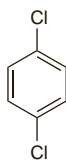


## Paradichlorobenzene

Dichlorobenzol; Paradichlorobenzol. 1,4-Dichlorobenzene.

$C_6H_4Cl_2 = 147.0$ .  
CAS — 106-46-7.



## Profile

Paradichlorobenzene has general properties similar to those of orthodichlorobenzene (see p.2358) but is considered to be less toxic. It is present in several preparations intended for the removal of ear wax (see p.1725). It has been used as a furniture preservative and in mothballs and lavatory deodorant blocks. Abuse of preparations containing paradichlorobenzene has been reported.

**Abuse.** Neurocutaneous symptoms have been reported<sup>1</sup> in 2 18-year-old twin girls after abuse of mothballs by inhaling the fumes, and in one twin, also chewing the mothballs. Once they stopped, both sisters recovered completely within 3 to 6 months depending on their previous level of abuse.

1. Feuillet L, *et al.* Twin girls with neurocutaneous symptoms caused by mothball intoxication. *N Engl J Med* 2006; **355**: 423-4.

## Preparations

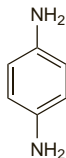
**Proprietary Preparations** (details are given in Part 3)

**Multi-ingredient:** **Austral:** Cerumol; **Canad:** Cerumol; **India:** Clear-wax; Waxolive; **Irl:** Cerumol; **Israel:** Cerumol; **Malaysia:** Cerumol; **Port:** Otoceri; **S.Afr:** Cerumol; **Singapore:** Cerumol; **Switz:** Cerumenol; **UK:** Cerumol.

## Paraphenylenediamine

Parafenilendiamina. *p*-Phenylenediamine; 1,4-Benzenediamine.

$C_6H_4(NH_2)_2 = 108.1$ .  
CAS — 106-50-3.



NOTE. Commonly known in the hairdressing trade as 'para'. 'PPD' is an abbreviation sometimes used for paraphenylenediamine, which should not be confused with tuberculin purified protein derivative (see Tuberculin, p.2405), which is also referred to by the same abbreviation.

## Profile

Paraphenylenediamine is widely used in permanent hair colour preparations. However it is a potent contact allergen and EU legislation restricts its concentration in the finished product to a maximum of 6% calculated as free base. Both type I and type II reactions occur and symptoms usually present as dermatitis on the face or hands. More severe reactions can lead to angioedema; anaphylaxis has also been reported. Systemic symptoms similar to those after ingestion (see below) may also occur following absorption through intact skin. For references to hypersensitivity after skin tattoos with henna that was adulterated with paraphenylenediamine, see p.2318.

Application of tints to the eyelashes or eyebrows may produce blepharoconjunctivitis, eye oedema, and eye pain, with progression to facial oedema and dermatitis, lachrymation, photophobia, uveitis, and keratitis in severe cases. Corneal necrosis has led to blindness. In some countries, use of paraphenylenediamine in eyelash or eyebrow tints is not permitted.

Early symptoms after ingestion of paraphenylenediamine are vomiting and abdominal pain. Severe oedema of the face and oropharynx can lead to life-threatening obstruction of the airways. Other symptoms may include hypotension or hypertension, tachycardia, hepatotoxicity, renal failure, metabolic acidosis, methaemoglobinemia, rhabdomyolysis, tremor, convulsions, and coma; multisystem failure may be fatal.

Some studies have linked hair dyes with mutagenicity and carcinogenicity, although such findings have often been refuted. In Europe, EU legislation carefully controls which substances may be safely used in hair dye products.

Paraphenylenediamine is also used in the textile and photographic industries.

## Adverse effects. References.

1. Ashraf W, *et al.* Systemic paraphenylenediamine (PPD) poisoning: a case report and review. *Hum Exp Toxicol* 1994; **13**: 167-70.

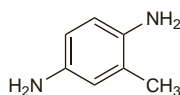
The symbol † denotes a preparation no longer actively marketed

2. Lifshits M, *et al.* Fatal paraphenylenediamine (hair dye) intoxication in a child resembling Ludwig's angina. *J Toxicol Clin Toxicol* 1993; **31**: 653-6.
3. Anuradha S, *et al.* Acute renal failure following para-phenylenediamine (PPD) poisoning: a case report and review. *Ren Fail* 2004; **26**: 329-32.
4. Kallel H, *et al.* Clinical manifestations of systemic paraphenylenediamine intoxication. *J Nephrol* 2005; **18**: 308-11.
5. Sosted H, *et al.* Severe allergic hair dye reactions in 8 children. *Contact Dermatitis* 2006; **54**: 87-91.
6. Brahmi N, *et al.* Acute myocarditis and myocardial infarction induced by paraphenylenediamine poisoning. Interest of angiogramography. *Int J Cardiol* 2006; **113**: E93-E95.
7. Teixeira M, *et al.* Contact allergy to para-phenylenediamine in a permanent eyelash dye. *Contact Dermatitis* 2006; **55**: 92-4.
8. Patel S, *et al.* Patch test frequency to *p*-phenylenediamine: follow up over the last 6 years. *Contact Dermatitis* 2007; **56**: 35-7.

## Paratoluenediamine

Paratoluenediamina. 2-Methyl-1,4-phenylenediamine.

$C_7H_9N_2 = 122.2$ .  
CAS — 95-70-5.



## Profile

Paratoluenediamine is used in hair colour preparations.

Like paraphenylenediamine, above, paratoluenediamine may be associated with sensitivity reactions.

## Parsley

Perejil; Persil; Persil, racine de (parsley root); Petersilie; Petroselinia radix (parsley root); Petroselinum; Petrželový kořen (parsley root).

## Profile

Parsley (*Petroselinum crispum*, Umbelliferae) is used in herbal medicine, where it is mainly given as a diuretic. It is also used as a culinary herb and flavouring.

Parsley oil has been used in aromatherapy.

## Preparations

**Proprietary Preparations** (details are given in Part 3)

**UK:** Odo-fre.

**Multi-ingredient:** **Arg:** Alofresh†; Water Pill c Potasio†; **Austral:** Extralife Fluid-Care; Medinat PMT-Ezet†; Odourless Garlic; Uva-Ursi Plus†; **Canad:** Herbal Diuretic; Herbal Throat†; **Cz:** Species Diureticae Planta†; Species Urologicae Planta†; Urologicka Cajova Smes; **Fr:** Oropur; **Ger:** Asparagus-P; nephro-loges; **Malaysia:** Total Man†; **Rus:** Herblon Urological Drops (Герблон Урологические Капли); **UK:** Athera; Fre-bre; Mixed Vegetable Tablets; Modern Herbs Menopause.

## Parsley Piert

Alchémille des Champs; Alquimila arvense; Aphanes; Gewöhnlicher Acker-Frauenmantel.

## Profile

Parsley piert, the aerial parts of *Aphanes arvensis* (*Alchemilla arvensis*) (Rosaceae) has astringent, diuretic, and demulcent properties. It is used for urinary-tract disorders, including renal and urinary calculi.

## Preparations

**Proprietary Preparations** (details are given in Part 3)

**Cz:** Kontryhelova Nat.

**Multi-ingredient:** **Austral:** Profluid†; Protemp†; **Canad:** Swiss Herb Cough Drops; **Cz:** Fytokliman Planta; Gynastan†; **Fr:** Gonaxine; **UK:** Backache Relief; Diuretabs; HRI Water Balance; Watershed.

## Passion Flower

Golgotavirág hájtásvég; Grenadille; Kärsimyskulka; May-pop; Mučenková nat†; Pasiflora; Pasifloru zölé; Pasionari; Passiflora; Passiflorae herba; Passiflore; Passionsblomma.

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

**Ph. Eur. 6.2** (Passion Flower). The fragmented or cut, dried aerial parts of *Passiflora incarnata*; it may also contain flowers and/or fruits. It contains not less than 1.5% of total flavonoids expressed as vitexin ( $C_{21}H_{20}O_{10} = 432.4$ ), calculated with reference to the dried drug. Protect from light.

## Profile

Passion flower is reputed to have antispasmodic and sedative properties and has been used as an ingredient of herbal remedies, chiefly in the form of a liquid extract tincture.

**Homeopathy.** Passion flower has been used in homeopathic medicines under the following names: *Passiflora incarnata*; *Passi. in.*

## Preparations

**Proprietary Preparations** (details are given in Part 3)

**Arg:** Sedante Noche; **Austria:** Passiflorin; **Belg:** Sedanox; **Ger:** Hoggar Balance; Kytta-Sedativum für den Tag; Passidor; Passiflora Curana; **Pol:** Passiflor; **Rus:** Novo-Passit (Hobo-Taccin); **Switz:** Passelly; Plantival Monot†; **Turk:** Alora; **UK:** Modern Herbs Sleep Aid; Natracalm; Naturest; Nodoff; Phytocalm; **Venez:** Floral Pal.

**Multi-ingredient:** **Arg:** Armonil; Calmabts†; Herbaccion Sedante†; In-somnal†; Nervocalm; No-Nerviol†; Passacanthine†; SDN 200; Sedanat; Sedante Arcel†; Sedante Dia; Serenil; Sigmasedan†; Top Life Relax†; Yerba Di-et; **Austral:** Calm; Calmo; Euphorbia Complex; Executive B; Extralife Sleep-Care; Goodnight Formula†; Herbal Anxiety Formula†; Humulus Compound; Lifesystem Herbal Plus Formula 2 Valerian†; Multi-Vitamin Day & Night†; Natural Deep Sleep; Nervatona Calm; Nervatona Focus; Pacifinity†; Passiflora Complex†; Passionflower Plus; Proeston†; Prosed-X†; Relaxaplex†; Valerian Plus Herbal Plus Formula 12†; **Austria:** Nervenruh; Passedan†; Passely†; Sedogelat; Vechseltee St Severin; **Belg:** Sedinal; Seneuval; **Braz:** A Saude da Mulher; Anevrase†; Anevrase†; Bronquiogem; Calman; Calmapax; Calmazin†; Calmiplan; Composto Emagrecedor†; Elixir de Passiflora†; Emagrevit†; Floriny; Gotas Nican†; Pasalix; Pasic; Passaneuro; Passi Catha†; Passicalm†; Passiflora Composita†; Passiflorine; Passilex†; Sedalin†; Serenus; Somine†; Vagostes†; **Canad:** Herbal Sleep Well†; Natural HRT Nighttime; Relax and Sleep; **Chile:** Armonyl; Recalm; **Cz:** Bio-Strath†; Novo-Passit; Passedan; Visinal†; **Fr:** Anxoral†; Biocalm; Euphytose; Mediflor Tisane Calmante Troubles du Sommeil No 14; Natudor; Neuroflorine; Nocvalene†; Panxeol; Passiflorine; Passinevryl; Phytocalm†; Sedatif Tiber; Sympauro†; Sympavagol; **Ger:** Biosedon†; Dormo-Sem†; Dormoverlan; Dr. Scheffler Bergischer Krauterei Nerven- und Beruhigungstee; Gut-nacht†; Habstal-Nerv N†; Hyposedon N†; Kytta-Sedativum; Moradorm S; Nervendragees†; Nervinfant N†; Nervoregin forte†; Nervoregin phyto; Neurapas; Passin; Phytonoct; Presselin Nerven K I N†; Pronervon Phyto; RubieSed†; Seda-Plantina†; Sedinfant N†; Somnux S†; Tornix; Valeriana mild†; Vivinox Day; **Hong Kong:** Epizon†; **Indon:** Slip-iZZZ; **Israel:** Calmanvix; Nerven-Dragees; Passiflora; Passiflora Compound; **Ital:** Actenacok; Anevras†; Biocalm; Calmason; Controller†; Dormil; Fitosonno; Noctis; Parvisedil; Passiflorine; Reve; Sedatol; Sedofit; Sedopier F; Val-Plus†; **Malaysia:** Cleansa Plus†; **Mex:** Ifupasil; Pasinordin†; **Pol:** Nervendragees; Nerwonat; Passibil; Passipasm†; Passispasmol; Psychotonisol; Valused†; **Port:** Gabisedil†; Neurocardol†; Valesono†; **S.Afr:** Avena Sativa Comp; Biral; **Spain:** Passiflorine; Sedasol†; Sedonast; Sonofit†; Valdispert Complex; **Switz:** Circulan; Dicalm†; Dragees antirhumatismales; Dragees pour la detente nerveuse; Dragees pour le coeur et les nerfs; Gouttes pour le coeur et les nerfs Concentrees†; Phytomed Cardio; Phytomed Nervo†; Phytomed Somnif†; Relaxane; Relaxo; Siro Passi-Par†; Soporin; Strath Gouttes pour le coeur; Strath Gouttes pour le nerf et contre l'insomnie; Tisane antirhumatismale; Tisane calmante pour les enfants; Tisane relaxante N†; Valverde Coeur; Valverde Detente dragees; **UK:** Anased; Avena Sativa Comp; Bio-Strath Valerian Formula; Daily Tension & Strain Relief; Gerard House Serenity; Herbal Pain Relief; HRI Night; Kalms Sleep; Modern Herbs Stress; Niteherb Plus; Nodoff; Nylot Herbal; PMT Formula; Quiet Life; Quiet Nite; Quiet Tyme; Relax B†; Slumber; Somine†; Herbal; SuNervin; **Venez:** Crater†; Equaliv; Eufytose†; Lupassin; Pasidor; Passifluidina; Passiflorum; Rendetil; Sedival.

## Patchouli

## Profile

Patchouli (*Pogostemon cablin*, Lamiaceae) is the source of patchouli oil, which is distilled from the dried leaves and young shoots. Patchouli oil is used in aromatherapy.

In traditional Chinese medicine the dried aerial part is known as Guang Huo Xiang.

**Homeopathy.** Patchouli oil has been used in homeopathic medicines.

## Patent Blue V

Acid Blue 3; Azul Patente V; CI Food Blue 5; Colour Index No. 42051; E131. Calcium  $\alpha$ -(4-diethylaminophenyl)- $\alpha$ -(4-diethyliminocyclohexa-2,5-dienylidene)-5-hydroxytoluene-2,4-disulphonate.

$(C_{27}H_{31}N_2O_7S_2)_2Ca = 1159.4$ .  
CAS — 3536-49-0.

NOTE. The name Patent Blue V is also used as a synonym for Sulphan Blue (CI No. 42045) (see p.2394).

## Pharmacopoeias. In Fr.

## Adverse Effects and Precautions

Hypersensitivity reactions may occur immediately or a few minutes after injection of patent blue V; on rare occasions they may be severe and include shock, dyspnoea, laryngeal spasm, and oedema. Nausea, hypotension, and tremor have been reported. Giving a small dose to test for hypersensitivity has been suggested.

**Hypersensitivity.** An urticarial rash occurred in a 5-year-old girl after use of tablets containing patent blue V to disclose the presence of dental plaque.<sup>1</sup> Severe anaphylactic reactions, including shock, have been reported.<sup>2,5</sup>

1. Chadwick BL, *et al.* Allergic reaction to the food dye patent blue. *Br Dent J* 1990; **168**: 386-7.

2. Woltsche-Kahr I, *et al.* Anaphylactic shock following peritumoral injection of patent blue in sentinel lymph node biopsy procedure. *Eur J Surg Oncol* 2000; **26**: 313-14.

3. Adverse Drug Reactions Advisory Committee (ADRAC). Patent blue V and anaphylaxis. *Aust Adverse Drug React Bull* 2002; **21**: 10. Also available at: <http://www.tga.health.gov.au/adrb/aadrb/2008.htm> (accessed 02/07/04)

4. Wöhrli S, *et al.* Near-fatal anaphylaxis to patent blue V. *Br J Dermatol* 2004; **150**: 1037-8.

5. Dewachter P, *et al.* Anaphylactic reaction to patent blue V after sentinel lymph node biopsy. *Acta Anaesthesiol Scand* 2006; **50**: 245-7.