

Synonyms and/or components:

Ethylenediamine dihydrochloride

- Chlor-ethamine
- Ethylenediammonium chloride
- Ethylenediamine (EDA)
- Dimethylenediamine dihydrochloride
- 1,2-Diaminoethane dihydrochloride

Chemical Identification: CAS Registry No. 333-18-6, EINECS 206-369-6

Other substances to which the patient may react:

- Diethylenetriamine (DETA)
- Triethylenetetramine (TETA)
- Disalicylalpropylenediimine
- Epoxy amines
- Rarely, orally administered piperazine-related antihistamines

Potential Allergen Sources:

- Used in the industrial manufacturing of chelating agents, corrosion inhibitors, fuel additives, epoxy curing agents, pharmaceuticals, carbamate-based chemicals, bleach activators, retention and processing aids, plastic lubricants, urethane foam catalysts, printing ink binders, and textile dye-assist compounds.



Industry & Manufacturing

12. COBALT DICHLORIDE

Concentration: 0.020 mg/cm²

Vehicle: Hydroxypropyl cellulose

Allergen patch components: Cobalt, 0.0040 mg

Synonyms and/or components:

Cobalt dichloride or cobalt: • Cobalt metal, metal powder, dust or fume

Chemical Identification: CAS Registry No. 7440-48-4, EINECS 231-158-0

Other substances to which the patient may react (based on cosensitization):

- Nickel
- Chromate

Potential Allergen Sources:

- Cement and bricks;
- Cobalt and cobalt alloys; cobalt catalysts; cobalt fumes, powders and pigments;
- Metalworking fluids and oils;
- Metal tools, jewelry and utensils (as with nickel);
- Paints, inks, glazes and finishes.



Industry & Manufacturing

13. P-TERT-BUTYLPHENOL FORMALDEHYDE RESIN

Concentration: 0.045 mg/cm²

Vehicle: Hydroxypropyl cellulose

Allergen patch components: *p-tert*-Butylphenol formaldehyde resin, 0.036 mg

Synonyms and/or components:

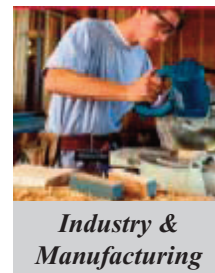
p-tert-Butylphenol formaldehyde (PTBP):

- Paraformaldehyde, formaldehyde, *p-tert*-butylphenol polymer
- Formaldehyde, *p-tert*-butylphenol polymer
- 4-(1,1-Dimethylethyl)phenol, formaldehyde polymer
- *p-tert*-Butylphenol formaldehyde resin (PTBP FR)

Chemical Identification: CAS Registry No. 25085-50-1

Potential Allergen Sources:

- Adhesives and glues in leather and rubber shoe manufacturing and repair; neoprene adhesives; glues for furniture and auto upholstery;
- Construction materials such as laminated wood products;
- Manufacture of fiberglass and mineral fiber insulation; modifiers in resin manufacturing;
- Photosensitive coatings.



14. EPOXY RESIN

Concentration: 0.050 mg/cm²

Vehicle: Hydroxypropyl cellulose

Allergen patch components: Diglycidylether of bisphenol A, 0.032 mg

Synonyms and/or components:

Epoxy resin or diglycidylether of bisphenol A:

- Bisphenol A diglycidyl ether
- Diphenylol propane diglycidyl ether
- 2,2-Bis(4-glycidylloxyphenyl)propane
- 4,4'-Dihydroxydiphenyldimethylmethane diglycidyl ether
- Diglycidyl bisphenol A
- Diomethane diglycidyl ether
- 4,4'-Isopropylidenediphenol diglycidyl ether

Chemical Identification: CAS Registry No. 1675-54-3, EINECS 216-823-5

Other substances to which the patient may react:

- Bisphenol A-glycidyl methacrylate (or Bis-GMA)
- Tosylamide epoxy resin
- Epoxy resins with diglycidyl ethers of bisphenol F

Potential Allergen Sources:

- Two-component paints, protective coatings and adhesives;
- Manufacturing of epoxy composite products including lightweight equipment, tennis racquets, skis, and circuit boards;
- Electron microscopy embedding media;
- Dental bonding agents and dental restorative materials.



15. CARBA MIX

Concentration: 0.25 mg/cm²

Vehicle: Hydroxypropyl cellulose

Allergen patch components: Diphenylguanidine, 0.067 mg;
Zincdibutyldithiocarbamate, 0.067 mg;
Zincdiethyldithiocarbamate, 0.067 mg

Synonyms and/or components:

Diphenylguanidine:

- N,N'-Diphenylguanidine
- 1,3-Diphenylguanidine

Zincdibutyldithiocarbamate:

- Carbamic acid, dibutyldithio-, zinc complex
- Bis(N,N-dibutyldithiocarbamato)zinc

Zincdiethyldithiocarbamate:

- Zinc bis(diethyldithiocarbamate)
- Diethyldithiocarbamic acid zinc salt
- Zinc diethylcarbomodithioate

Chemical Identification: *Diphenylguanidine* - CAS Registry Nos. 102-06-7,
EINECS 203-002-1

Zincdibutyldithiocarbamate - CAS Registry Nos. 136-23-2,
EINECS 205-232-8

Zincdiethyldithiocarbamate - CAS Registry Nos. 14324-55-1

Other substances to which the patient may react:

Thiuram-based rubber additives that have the potential for cross-reactivity and cosensitization -

- Tetramethylthiuram monosulfide
- Tetremethylthiuram disulfide
- Dipentamethylenethiuram disulfide
- Disulfiram

Potential Allergen Sources:

Used in fungicides, pesticides and the manufacturing of natural rubber, butyl rubber, nitrile or neoprene for:

- Industrial and safety products such as boots, shoes, adhesives, plugs, goggles, mats, headphones, masks, respirators, aprons, gloves, cords, tubing, insulation, and sheeting;
- Office products such as rubber bands, erasers, mats, and utility gloves;
- Health care equipment such as medical and utility gloves, masks, bed sheeting, dental dams, anesthesia equipment, aprons, and tubing;
- Sports equipment and household products such as wetsuits, shoes, boots, masks, racquet and club handles.



16. BLACK RUBBER MIX

Concentration: 0.075 mg/cm²

Vehicle: Polyvidone

Allergen patch components: N-Isopropyl-N'-phenyl paraphenylenediamine, 0.0102 mg;
N-Cyclohexyl-N'-phenyl paraphenylenediamine, 0.0255 mg;
N, N'-Diphenyl paraphenylenediamine, 0.0255 mg

Synonyms and/or components:

N-Isopropyl-N'-phenyl-paraphenylenediamine:

- N-Phenyl-N'-isopropyl-*p*-phenylenediamine

N-Cyclohexyl-N'-phenyl-paraphenylenediamine:

- N-Cyclohexyl-N'-phenyl-1,4-benzenediamine

N,N'-Diphenyl-paraphenylenediamine:

- *p*-Phenylaminodiphenylamine
- 1,4-Dianilinobenzene

- Diphenyl-*p*-phenylenediamine
- *p*-Bis(phenylamino)benzene
- 4,4'-Diphenyl-*p*-phenylenediamine

Chemical Identification:

N-Isopropyl-N'-phenyl-paraphenylenediamine –
CAS Registry Nos: 3085-82-3, EINECS 221-404-5;

N-Cyclohexyl-N'-phenyl-paraphenylenediamine –
CAS Registry RN: 101-87-1, EINECS 202-984-9

N,N'-Diphenyl-paraphenylenediamine –
CAS Registry Nos. 74-31-7, EINECS 200-806-4

Potential Allergen Sources:

Antidegradant used in the manufacture of black rubber for: Rubber

- Industrial products such as tires, belts, masks, aprons, gaskets, flanges, stoppers, Chemicals shoes and boots, sheeting and flooring;
- Black rubber components on health care and laboratory equipment;
- Office products made with black rubber components such as feet and wheels on equipment;
- Household products and sports equipment made with black rubber such as masks and goggles, shoes, tires, boots, masks, racquet and club handles.

Rubber
Chemicals



17. CL+ ME-ISOTHIAZOLINONE (MCI/MI)

Concentration: 0.0040 mg/cm²

Vehicle: Polyvidone

Allergen patch components: 5-Chloro-2-methyl-4-isothiazolin-3-one (MCI), 0.0024 mg;
2-Methyl-4-isothiazolin-3-one (MI), 0.0008 mg

Synonyms and/or components:

5-Chloro-2-methyl-4-isothiazolin-3-one:

- Kathon

- Methylchloroisothiazolinone (MCI)
- 5-Chloro-2-methyl-2H-isothiazol-3-one

2-Methyl-4-isothiazolin-3-one:

- 2-Methyl-3(2H)-isothiazolone

- Methylisothiazolinone (MI)
- 2-Methyl-2H-isothiazol-3-one

Chemical identification:

5-Chloro-2-methyl-4-isothiazolin-3-one –
CAS Registry Nos. 26172-55-4, EINECS 247-500-7

2-Methyl-4-isothiazolin-3-one –
CAS Registry Nos. 2682-20-4, EINECS 220-239-6,
EPA Pesticide Chemical Code 107104

Other substances to which the patient may react:

- Other chlorinated isothiazolinones

Potential allergen sources:

Biocide and preservative used in industrial and consumer products including:

- Cleaning and laundry products, skin cleansers and shampoos, hair coloring products, hand and body lotions, cosmetics;
- Latex paints, adhesives and glues;
- Industrial metal working fluids.



18. QUATERNIUM-15

Concentration: 0.100 mg/cm²

Vehicle: Hydroxypropyl cellulose

Allergen patch components: Quaternium-15, 0.081 mg

Synonyms and/or components:

Quaternium-15:

- Hexamethylenetetramine chloroallyl chloride
- N-(3-Chloroallyl)hexaminium chloride
- Chloroallyl methenamine chloride
- 3,5,7-Triaza-1-azoniaadamantane, 1-(3-chloroallyl)-, chloride

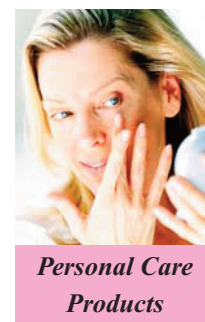
Chemical Identification: CAS Registry Nos. 4080-31-3, EINECS 223-805-0, EPA Pesticide Chemical Code 017901

Other formaldehyde-releasing substances to which the patient may react:

- Formaldehyde or formalin; formic aldehyde; oxymethylene
- Bronopol or 2-bromo-2-nitropropane-1,3-diol
- Diazolidinyl urea or N,N'-bis(hydroxymethyl) urea; 1-(1,3-Bis(hydroxymethyl)-2,5-dioximidazolidin-4-yl)-1,3-bis(hydroxymethyl)urea
- DMDM Hydantoin or 1,3-cimethylol-5,5-dimethylhydantoin; 1,3-Bis(hydroxymethyl)-5,5-dimethylimidazolidine-2,4-dione
- Imidazolidinyl urea or imidurea; N,N"-methylenebis(N'-(3-(hydroxymethyl)-2,5-dioxo-4-imidazolidinyl)urea
- Tris nitro or trimethylolnitromethane; nitroisobutylglycerol; 2-nitro-2-(hydroxymethyl)-1,3-propanediol, tris(hydroxymethyl)nitromethane

Potential Allergen Sources:

- Personal care products (cosmetics, hair and hygiene products);
- Household cleaning agents and latex paints;
- Industrial polishes, waxes, inks, paints and metal working fluids.



19. MERCAPTOBENZOTHIAZOLE

Concentration: 0.0075 mg/cm²

Vehicle: Polyvidone

Allergen patch components: Mercaptobenzothiazole, 0.061 mg

Synonyms and/or components:

Mercaptobenzothiazole (MBT):

- 2-Benzothiazolinethione
- Benzothiazole-2-thione
- 2-Mercaptobenzothiazole
- 2-Benzothiazolethiol
- 2-Benzothiazolyl mercaptan

Chemical Identification: CAS Registry Nos. 149-30-4; EINECS 205-736-8

Other substances to which the patient may react:

- Due to cosensitization, rubber additives such as dibutyl thiourea or diphenyl thiourea, often used in rubber products with MBT.

Potential Allergen Sources:

Used in the manufacturing of natural rubber, butyl rubber, nitrile or neoprene for:

- Industrial and safety products such as boots, shoes, adhesives, plugs, goggles, mats, headphones, masks, respirators, aprons, gloves, cords, tubing, insulation, and sheeting;
- Office products such as rubber bands, erasers, mats, and utility gloves;
- Health care equipment such as medical and utility gloves, masks, bed sheeting, dental dams, anesthesia equipment, aprons, and tubing;
- Sports equipment and household products such as utility gloves, swimwear, toys, wetsuits, shoes, boots, masks, racquet and club handles.



Rubber Chemicals

20. P-PHENYLENEDIAMINE

Concentration: 0.090 mg/cm²

Vehicle: Polyvidone

Allergen patch components: *p*-Phenylenediamine, 0.073 mg

Synonyms and/or components:

p-Phenylenediamine:

- 4-Phenylenediamine
- *p*-Diaminobenzene
- 1,4-Benzenediamine
- Paraphenylenediamine (PPD)
- Phenylenediamine
- 4-Aminoaniline
- 1,4-Diaminobenzene

Chemical Identification: CAS Registry Nos. 106-50-3, EINECS 203-404-7

Other substances to which the patient may react:

- Textile dyes such as aniline yellow (*p*-aminoazobenzene; *p*-dimethylaminoazobenzene) or disperse orange (1-amino-2-methylantraquinone);
- Hair dyes *p*-toluenediamine and *p*-toluenediamine sulfate;
- 4,4'-Methylenedianiline in some rubbers, plastics and epoxy resins;
- Other aminobenzene-related compounds.

Potential Allergen Sources:

- Permanent and semipermanent coloring products for hair and facial hair;
- Temporary, paint-on and black henna tattoos;
- Textile and fur dyes;
- Photodeveloping agents and printing inks;
- Black rubber products.



Personal Care Products

21. FORMALDEHYDE

Concentration: 0.18 mg/cm²

Vehicle: Polyvidone

Allergen patch components: Formaldehyde, 0.15 mg

Synonyms and/or components:

Formaldehyde:

- Formic aldehyde
- Methyl aldehyde
- N-methylol
- Formalin
- Methaldehyde
- Methylene oxide
- Oxymethylene

Chemical Identification: CAS Registry Nos. 50-00-0, EINECS 200-001-8, EPA Pesticide Chemical Code 043001

Other formaldehyde-releasing substances to which the patient may react:

- Bronopol or 2-bromo-2-nitropropane-1,3-diol
- Diazolidinyl urea or N,N'-bis(hydroxymethyl) urea; 1-(1,3-Bis(hydroxymethyl)-2,5-dioxoimidazolidin-4-yl)-1,3-bis(hydroxymethyl)urea
- DMDM Hydantoin or 1,3-cimethylol-5,5-dimethylhydantoin; 1,3-Bis(hydroxymethyl)-5,5-dimethylimidazolidine-2,4-dione
- Imidazolidinyl urea or imidurea; N,N"-methylenebis(N'-(3-(hydroxymethyl)-2,5-dioxo-4-imidazolidinyl)urea
- Tris nitro or trimethylolnitromethane; nitroisobutylglycerol; 2-nitro-2-(hydroxymethyl)-1,3-propanediol, tris(hydroxymethyl)nitromethane

Potential Allergen Sources:

- Pressed wood construction materials (particleboard, fiberboard, plywood), and urea-formaldehyde resins and foams;
- Durable press fabrics;
- Personal care products (cosmetics, hair and hygiene products);
- Metal working fluids, glues, cleaning agents, latex paints, polishes, waxes, inks;
- Embalming and preserving fluids.



Personal Care Products

22. MERCAPTO MIX

Concentration: 0.075 mg/cm²

Vehicle: Polyvidone

Allergen patch components: N-Cyclohexylbenzothiazyl-sulfenamide, 0.0203 mg; Dibenzothiazyl disulfide, 0.0203 mg; Morpholinylmercaptobenzothiazole, 0.0203 mg

Synonyms and/or components:

N-Cyclohexylbenzothiazyl-sulfenamide:

- 2-(Cyclohexylaminothio)benzothiazole

Dibenzothiazyl disulfide:

- Dibenzothiazolyl disulfide
- 2,2'-Dibenzothiazyl disulfide

Morpholinylmercaptobenzothiazole:

- 2-Morpholinodithiobenzothiazole
- 4-Morpholinyl 2-benzothiazyl disulfide

- Cyclohexyl benzothiazolesulfenamide
- Benzothiazyl-2-cyclohexylsulfenamide

- 2,2'-Dithiobis(benzothiazole)
- 2,2'-Bis(benzothiazolyl) disulfide
- 2-Mercaptobenzothiazole disulfide

- 2-Benzothiazolyl morpholino disulfide
- Benzothiazole 2-(4-morpholinyl)
- Benzothiazole, 2-(4-morpholinyl)dithio)

Chemical Identification: *N-Cyclohexylbenzothiazyl-sulfenamide* – CAS Registry Nos. 95-33-0, EINECS 202-411-2

Dibenzothiazyl disulfide – CAS Registry Nos. 120-78-5, EINECS 204-424-9, EPA Pesticide Chemical Code 009202

Morpholinylmercaptobenzothiazole – CAS Registry Nos. 95-32-9, EINECS 202-410-7

Other substances to which the patient may react:

- Due to cosensitization, commonly used rubber additives such as thioureas.

Potential Allergen Sources:

Used in the manufacturing of natural rubber, butyl rubber, nitrile or neoprene for:

- Industrial and safety products such as boots, shoes, adhesives, plugs, goggles, mats, headphones, masks, respirators, aprons, gloves, cords, tubing, insulation, and sheeting;
- Office products such as rubber bands, erasers, mats, and utility gloves;
- Health care equipment such as medical and utility gloves, masks, bed sheeting, dental dams, anesthesia equipment, aprons, and tubing;
- Sports equipment and household products such as gloves, swimwear, toys, wetsuits, footwear, masks, racquet and club handles.

Rubber
Chemicals



23. THIMEROSAL

Concentration: 0.0080 mg/cm²

Vehicle: Hydroxypropyl cellulose

Allergen patch components: Thimerosal, 0.0065 mg

Synonyms and/or components:

Thimerosal:

- Mercuriothiolate
- Sodium ethylmercurithiosalicylate
- Mercury, ((o-carboxyphenyl)thio)ethyl-, sodium salt
- Merthiolate
- Sodium 2-(ethylmercurithio)benzoate
- Mercury, ethyl(2-mercaptobenzoato-S)-, sodium salt

Chemical Identification: CAS Registry Nos. 54-64-8, EINECS 200-210-4, EPA Pesticide Chemical Code 078901

Other substances to which the patient may react:

- Other mercurial compounds
- Thiosalicylic acid derivatives such as piroxicam (Feldene®)

Potential Allergen Sources:

Infrequently used as a preservative in:

- Some vaccines and ophthalmic, otic and nasal preparations;
- Some fluorescent dyes in metal and forensic industries;
- Some thiosalicylic acid-based nonsteroidal anti-inflammatories.



*Drugs and
medicines*

24. THIURAM MIX

Concentration: 0.025 mg/cm²

Vehicle: Polyvidone

Allergen patch components: Tetramethylthiuram monosulfide, 0.0051 mg;
Tetramethylthiuram disulfide, 0.0051 mg;
Disulfiram, USP, 0.0051 mg;
Dipentamethylenethiuram disulfide, 0.0051 mg

Synonyms and/or components:*Tetramethylthiuram monosulfide:*

- Tetramethylthiuram sulfide
- Sulfide, bis(dimethylthiocarbamoyl)

- Tetramethyldithiocarbamic acid anhydrosulfide
- Bis(dimethylthiocarbamoyl) sulfide

Tetramethylthiuram disulfide:

- Bis(dimethyl thiocarbamoyl)disulfide
- Tetramethylthiocarbamoyldisulphide

- Thiram
- Tetramethylthioperoxydicarbonic diamide
- N,N'-(Dithiodicarbonothioyl) bis(N-methylmethanamine)

Disulfiram:

- Bis(N,N-diethylthiocarbamoyl) disulfide
- Tetraethylthioperoxydicarbonic diamide

- Tetraethylthiuram disulfide
- 1,1'-Dithiobis(N,N-diethylthioformamide)

Dipentamethylenethiuram disulfide:

- Bis(pentamethylene)thiuram disulfide

- Disulfide, bis(1-piperidinylthioxomethyl)
- 1,1'-(Dithiodicarbonothioyl)bispiperidine

Chemical Identification: Tetramethylthiuram monosulfide - CAS RN: 97-74-5, EINECS 202-605-7;
Tetremethylthiuram disulfide - CAS Registry Nos. 137-26-8, EINECS 205-286-2, EPA Pesticide Chemical Code 079801;
Disulfiram - CAS Registry Nos. 97-77-8, EINECS 202-607-8;
Dipentamethylenethiuram disulfide - CAS Registry Nos. 94-37-1, EINECS 202-328-1

Other substances to which the patient may react:

- Carbamates (carba mix), due to either cross-reactivity or cosensitization;
- Other rubber additives due to cosensitization.

Potential Allergen Sources:

Used in fungicides, pesticides, seed protectants, animal repellants, Antabuse® and the manufacturing of natural rubber, butyl rubber, nitrile or neoprene for:

- Industrial and safety products such as boots, shoes, adhesives, plugs, goggles, mats, headphones, masks, respirators, aprons, gloves, cords, tubing, insulation, and sheeting;
- Office products such as rubber bands, erasers, mats, and utility gloves;
- Health care equipment such as medical and utility gloves, masks, bed sheeting, dental dams, anesthesia equipment, aprons, and tubing;
- Sports equipment and household products such as toys, gloves, swimwear, wetsuits, shoes, boots, masks, racquet and club handles.



25. DIAZOLIDINYL UREA (GERMALL® II)

Concentration: 0.55mg/cm²

Vehicle: Polyvidone

Allergen component per patch: Diazolidinyl urea, 0.45 mg

Synonyms or components:

Diazolidinyl urea:

- Germall 11
- Imidazolidinyl urea 11
- N-(1,3-Bis(hydroxymethyl)-2,5-dioxo-4-imidazolidinyl)-N,N'-bis(hydroxymethyl)urea
- N-(Hydroxymethyl)-N-(1,3-dihydroxymethyl-2,5-dioxo-4-imidazolidinyl)-N'-(hydroxymethyl) urea
- N-(Hydroxymethyl)-N-(1,3-dihydroxymethyl-2,5-dioxo-4-imidazolidinyl)-N'-(hydroxymethyl)urea

Chemical Identification: CAS Registry Nos. 78491-02-8,
EINECS Nos. 278-928-2

Other substances to which the patient may react:

- Imidazolidinyl urea
- Formaldehyde
- Bronopol
- Quaternium 15
- Dimethyl dimethyl hydantion

Potential Allergen Sources:

- Products for personal care, hygiene, and hair care;
- Cosmetics;
- Cleaning agents;
- Liquid soaps;
- Pet shampoos.

