

HYDROGEN PEROXIDE

Safety Data Sheet

1. IDENTIFICATION

Product name: HYDROGEN PEROXIDE

Synonyms
Hydrogen peroxide

Product Code
705

Recommended use: TO BLEACH AND DEODORISE COTTON, SYNTHETIC OR WOOL BLENDS IN THE LAUNDRY.

Supplier Name CLEAN PLUS CHEMICALS PTY LTD
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SDS Date 21 JANUARY 2021 Version 1.2

2. HAZARD IDENTIFICATION

Poisons Schedule (Aust) 6

Globally Harmonised System

Hazard Classification Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
Hazard Categories Skin Corrosion/Irritation - Category 1A Oxidising Liquids - Category 2 Corrosive to Metals - Category 1 Acute Toxicity (Oral) - Category 4 Acute Toxicity (Inhalation) - Category 4 Serious Eye Damage/Irritation - Category 1

Pictograms



Signal Word Danger

Hazard Statements	H271	May cause fire or explosion; strong oxidizer.
	H332	Harmful if inhaled.
	H302	Harmful if swallowed.
	H314	Causes severe skin burns and eye damage.
	H272	May intensify fire; oxidizer.
	H290	May be corrosive to metals.
	H318	Causes serious eye damage.
Precautionary Statements	Prevention P283	Wear fire/flamm resistant/retardant clothing.
	P271	Use only outdoors or in a well-ventilated area.
	P234	Keep only in original container.
	P270	Do not eat, drink or smoke when using this product.

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	P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Nonsmoking.
	P220	Keep/Store away from clothing/organic material/combustible materials.
	P221	Take any precaution to avoid mixing with combustibles/organic material.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P260	Do not breathe fume/gas/mist/vapours/spray.
	P264	Wash contacted areas thoroughly after handling.
	P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. Nonsmoking.
Response	P306 + P360	IF ON CLOTHING: Rinse immediately contaminated clothing and skin with plenty of water before removing clothes.
	P371 + P380 + P375	In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.
	P301 + P330 + P331	IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
	P303 + P361 + P353	IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.
	P363	Wash contaminated clothing before reuse.
	P304 + P340	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
	P310	Immediately call a POISON CENTER or doctor/physician.
	P305 + P351 + P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P390	Absorb spillage to prevent material damage.
	P301 + P312	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
	P370 + P378	In case of fire: Alcohol resistant foam is the preferred fire-fighting medium. However, if it is not available, fine water spray or water fog can be used to extinguish.
Storage	P405	Store locked up.
Disposal	P501	Dispose of contents/container in accordance with local / regional / national / international regulations.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification
Goods

Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Water	No Data Available	7732-18-5	30.0 - 60.0 %
Hydrogen Peroxide	No Data Available	7722-84-1	30.0 - 60.0 %

4. FIRST AID MEASURES

Description of necessary measures according to routes of exposure

Swallowed

For advice, contact a Poisons Information Centre or a doctor at once. Urgent hospital treatment is likely to be needed. If swallowed do NOT induce vomiting.
If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration. Observe the patient carefully.
Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious.
Give water to rinse out mouth, then provide liquid slowly and as much as casualty can comfortably drink. Transport to hospital or doctor without delay

Eye

Immediately hold eyelids apart and flush the eye continuously with running water.

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Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.
Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes. Transport to hospital or doctor without delay. Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

Skin	Immediately flush body and clothes with large amounts of water, using safety shower if available. Quickly remove all contaminated clothing, including footwear. Wash skin and hair with running water. Continue flushing with water until advised to stop by the Poisons Information Centre. Transport to hospital, or doctor.
Inhaled	If fumes or combustion products are inhaled remove from contaminated area. Lay patient down. Keep warm and rested. Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures. Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary. Transport to hospital, or doctor. Inhalation of vapours or aerosols (mists, fumes) may cause lung oedema. Corrosive substances may cause lung damage (e.g. lung oedema, fluid in the lungs). As this reaction may be delayed up to 24 hours after exposure, affected individuals need complete rest (preferably in semi-recumbent posture) and must be kept under medical observation even if no symptoms are (yet) manifested. Before any such manifestation, the administration of a spray containing a dexamethasone derivative or beclomethasone derivative may be considered. This must definitely be left to a doctor or person authorised by him/her.
Advice to Doctor	Treat symptomatically. Hydrogen peroxide at moderate concentrations (5% or more) is a strong oxidant. Direct contact with the eye is likely to cause corneal damage especially if not washed immediately. Careful ophthalmologic evaluation is recommended and the possibility of local corticosteroid therapy should be considered. Because of the likelihood of systemic effects attempts at evacuating the stomach via emesis induction or gastric lavage should be avoided. There is remote possibility, however, that a nasogastric or orogastric tube may be required for the reduction of severe distension due to gas formation" Depending on the degree of exposure, periodic medical examination is indicated. The symptoms of lung oedema often do not manifest until a few hours have passed and they are aggravated by physical effort. Rest and medical observation is therefore essential. Immediate administration of an appropriate spray, by a doctor or a person authorised by him/her should be considered. No information available on medical conditions aggravated by exposure to this product. Medical Conditions Aggravated by Exposure.

5. FIRE FIGHTING MEASURES

General Measures	Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk. Do NOT move cargo if cargo has been exposed to heat. Avoid getting water inside containers: a violent reaction may occur.
Flammability Conditions	Powerful oxidising agent. Not combustible, but will support the combustion of other material. Contact with other material may cause fire. Heat of reaction with reducing agents, or combustibles may cause ignition. Increases flammability of any combustible substance in contact with it. May ignite combustibles (wood, paper, clothing etc). Mixtures with combustible material are readily ignited and may burn fiercely.
Extinguishing Media	FOR SMALL FIRE: USE FLOODING QUANTITIES OF WATER. FOR LARGE FIRE : Flood fire area with water from a protected position. DO NOT use dry chemical, CO ₂ , foam or halogenated-type extinguishers. NOTE: Chemical extinguishing agents may accelerate decomposition. [CCINFO] DONOT use halogenated fire extinguishing agents.
Fire and Explosion Hazard	May act as an ignition source for dust or vapour explosions. May explode from heating, shock, friction, or contamination. Containers may explode when heated. Runoff may create a fire or explosion hazard. Heating can cause expansion or decomposition of the material, which can lead to the containers exploding.
Hazardous Products of Combustion	Involved in fire, it may decompose yielding oxygen.
Special Fire Fighting Instructions	Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment. Dam fire control water for later disposal.
Personal Protective Equipment	Firefighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves) or chemical splash suit.
Flash Point	Does not flash
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available

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Hazchem Code

2P

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure

Avoid accidents, clean up immediately.
Slippery when spilled. Eliminate all sources of ignition.
Increase ventilation. Avoid generating dust.
Use clean, non-sparking tools and equipment. Keep combustibles away from spilled material.
Isolate defective containers immediately, if possible and safe to do.
Place defective containers in waste receptacle (waste packaging receptacle) made of plastic (not metal). Do not seal defective containers or waste receptacles airtight (danger of bursting due to product decomposition). Never return spilled product into its original container for re-use. (Risk of decomposition.).

Clean Up Procedures

Minor Spills : Clean up all spills immediately. No smoking, naked lights, ignition sources. Avoid all contact with any organic matter including fuel, solvents, sawdust, paper or cloth and other incompatible materials, as ignition may result. Avoid breathing dust or vapours and all contact with skin and eyes.
Control personal contact with the substance, by using protective equipment. Contain and absorb spill with dry sand, earth, inert material or vermiculite. DO NOT use sawdust as fire may result. Scoop up solid residues and seal in labelled drums for disposal. Neutralise/decontaminate area.

Major Spills : Clear area of personnel and move upwind. Alert Fire Brigade and tell them location and nature of hazard. May be violently or explosively reactive. Wear full body protective clothing with breathing apparatus. Prevent, by any means available, spillage from entering drains or water course. Consider evacuation (or protect in place). No smoking, flames or ignition sources. Increase ventilation. Contain spill with sand, earth or other clean, inert materials. NEVER use organic absorbents such as sawdust, paper, cloth; as fire may result. Avoid any contamination by organic matter. Use spark-free and explosion-proof equipment. Collect any recoverable product into labelled containers for possible recycling. DO NOT mix fresh with recovered material. Collect residues and seal in labelled drums for disposal. Wash area and prevent runoff into drains. Decontaminate equipment and launder all protective clothing before storage and re-use. If contamination of drains or waterways occurs advise emergency services. For hydrogen peroxide:

Dilute with large quantities of water (at least ten (10) times the volume of hydrogen peroxide). Sodium bicarbonate may be used to accelerate breakdown

Containment

Stop leak if safe to do so. Isolate the danger area.
Dam with sand or earth. Do not use: textiles, saw dust, combustible substances.

Decontamination

Clean contaminated surface thoroughly. Recommended cleaning agent: water.

Environmental Precautionary Measures

Do NOT let product reach drains or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Management.

Evacuation Criteria

Evacuate all unnecessary personnel.

Personal Precautionary Measures

Do NOT touch damaged containers or spilled material unless wearing appropriate protective clothing as listed in section 8.

7. HANDLING AND STORAGE

Handling

DO NOT allow clothing wet with material to stay in contact with skin
Avoid personal contact and inhalation of dust, mist or vapours. Provide adequate ventilation.
Always wear protective equipment and wash off any spillage from clothing.
Keep material away from light, heat, flammables or combustibles. Keep cool, dry and away from incompatible materials. Avoid physical damage to containers.
DO NOT repack or return unused portions to original containers. Withdraw only sufficient amounts for immediate use. Use only minimum quantity required.
Avoid using solutions of peroxides in volatile solvents. Solvent evaporation should be controlled to avoid dangerous concentration of the peroxide.
Do NOT allow peroxides to contact iron or compounds of iron, cobalt, or copper, metal oxide salts, acids or bases. Do NOT use metal spatulas to handle peroxides.
Do NOT use glass containers with screw cap lids or glass stoppers.
Store peroxides at the lowest possible temperature, consistent with their solubility and freezing point.
CAUTION: Do NOT store liquids or solutions of peroxides at a temperature below that at which the peroxide freezes or precipitates. Peroxides in this form are extremely shock and heat-sensitive.
Refrigerated storage of peroxides must ONLY be in explosion-proof units.
The hazards and consequences of fires and explosions during synthesis and use of peroxides is widely recognised; spontaneous or induced decomposition may culminate in a variety of ways, ranging from moderate gassing to spontaneous ignition or explosion. The heat released from spontaneous decomposition of an energy-rich compound causes a rise in the surrounding temperature; the temperature will rise until thermal balance is established or until the material heats to decomposition, The most effective means for minimising the consequences of an

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accident is to limit quantities to a practical minimum. Even gram-scale explosions can be serious. Once ignited the burning of peroxides cannot be controlled and the area should be evacuated. Unless there is compelling reason to do otherwise, peroxide concentration should be limited to 10% (or less with vigorous reactants). Peroxide concentration is rarely as high as 1% in the reaction mixture of polymerisation or other free-radical reactions. Peroxides should be added slowly and cautiously to the reaction medium. This should be completed prior to heating and with good agitation. Addition of peroxide to the hot monomer is extremely dangerous. A violent reaction (e.g., fire or explosion) can result from inadvertent mixing of promoters (frequently used with peroxides in polymerisation systems) with full-strength peroxide. Organic peroxides are very sensitive to contamination (especially heavy-metal compounds, metal oxides, salts, alkaline materials including amines, strong acids, and many varieties of dust and dirt). This can initiate rapid, uncontrolled decomposition of peroxides and possible generation of intense heat, fire or explosion. The consequences of accidental contamination from returning withdrawn material to the storage container can be disastrous. When handling NEVER smoke, eat or drink. Always wash hands with soap and water after handling. Use only good occupational work practice. Observe manufacturer's storage and handling recommendations contained within this SDS.

Storage

Store in a cool, dry, well-ventilated area.
Packages, containers and tanks should regularly be checked by visual observation for any sign of abnormality, e.g. corrosion, exert pressure (bulging), temperature increase etc.
Protect against physical damage. Protect from light.
Store away from incompatible materials as listed in section 10.
Jointless smooth concrete floor. Recommendation: Acid-proof floor.
Only use containers which are specially permitted for: hydrogen peroxide and/or for transport, storage and tank installations only use suitable materials.
Use adequate venting devices on all packages, containers and tanks and check correct operation periodically.
Do not confine product in un-vented vessels or between closed valves.
Risk of overpressure and burst due to decomposition in confined spaces and pipes.
Transport and store container in upright position only.
Do not keep the container sealed.
Avoid residues of the product on the containers.
Avoid sun rays, heat, heat effect.
Keep away from sources of ignition - No smoking. Keep away from flammable substances. Keep away from incompatible substances.
Measures for storing in tank installations should include at least: Compatible materials, adequate separation, adequate venting area, venting devices, temperature measurement, earthing (grounding), bund in case of leakage. Prior to the first filling and operation of a tank installation all parts of the facility including all pipes must be thoroughly cleaned and flushed through.
Metal elements of the installation must first be pickled and passivated sufficiently.
Regularly verify the availability of water to deal with emergencies (for cooling, tank flooding, firefighting) and check correct operation periodically. Do not store together with: alkalis, reductants, metallic salts (risk of decomposition). Do not store together with: inflammable substances (risk of fire). Do not store together with: organic solvents.

This product has a UN classification of 2014, a Dangerous Goods Class 5.1 (Oxidiser) and a Subsidiary Risk 8 (Corrosive) according to The Australian Code for the Transport of Dangerous Goods By Road and Rail.

Container

Store in: containers with vented lids. Properly passivated aluminium containers. Properly passivated stainless steel. Polyethylene containers. Porcelain, vitreous stoneware. Teflon lined containers

Storage incompatibility : Hydrogen peroxide is a powerful oxidiser. Contamination or heat may cause self accelerating exothermic decomposition with oxygen gas and steam release - this may generate dangerous pressures - steam explosion. Reacts dangerously with rust, dust, dirt, iron, copper, acids, metals and salts, organic material. Is unstable if heated. (e.g): one volume of 70% hydrogen peroxide solution decomposes to produce 300 volumes of oxygen gas. In presence of a strong initiating source may be explosively reactive. Concentrated or pure material can generate heat and decompose spontaneously; can ignite or explode when heated, shocked, contaminated; or if placed in a basic (>7) environment, especially in the presence of metal ions. Mixtures with combustible materials may result in spontaneous combustion or may be impact- or heat- sensitive - evaporation or drying on towels or mop may cause a fire. Reacts violently with reducing agents, alcohols, ammonia, carboxylic acids, acetic acid, cobalt oxides, copper(II) chloride, ethers, metal powder, permanganates, acetone, benzenesulfonic anhydride, 1,1-dimethylhydrazine, dimethylphenylphosphine, gadolinium hydroxide, hydrogen selenide, iron oxides lithium tetrahydroaluminate, magnesium tetrahydroaluminate, manganese (II) oxide, mercury oxide, methyl hydrazine, nickel monoxide, nitrogenous bases, osmium tetroxide, alpha-phenylselenoketones, phosphorus, phosphorus(V) oxide, quinoline, tetrahydrothiophene, tin(II) chloride, thiodiglycol, thiophane, tin(II) chloride, unsaturated organic compounds, readily oxidisable and combustible materials; avoid contact with combustibles including lubricants and graphite. Reacts with cobalt, copper and its alloys, chromium, iridium, iron, lead, manganese, Monel, osmium, palladium, platinum, gold, silver, zinc, and other catalytic metals, metal oxides and salts - avoid metallic bowls and stirrers. Violent catalytic decomposition will occur in contact with certain metals such as iron, copper, chromium, brass, bronze, lead, silver, manganese or their salts. Forms unstable and possible explosive materials with acetic anhydride,

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aconitic acid, aniline, carboxylic acids, 1,4-diazabicyclo[2,2,2]octane, diphenyl diselenide, ethyl acetate, glycols, ketene, ketones, triethyltin hydroperoxide, 1,3,5-trioxane, vinyl acetate. is incompatible with mercurous chloride. decomposes in presence of alkalis and even ordinary dust or rust. decomposes in presence of alkalis and even ordinary dust or rust decomposes slowly at ordinary temperatures and builds up pressure in a closed container; the rate of decomposition doubles for each 10 deg C rise in temperature and decomposition becomes self-sustaining at 141 deg. C. Contact with rough surfaces can cause decomposition. Attacks and may ignite some plastics, rubber and coatings. Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General

Australia Exposure Standards hydrogen peroxide Hydrogen peroxide TWA 1.4 mg/m3 /
1 ppm EMERGENCY LIMITS : Hydrogen peroxide 30%- TEEL-1- 33 ppm

Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance. Industrial bronchitis, on the other hand, is a disorder that occurs as result of exposure due to high concentrations of irritating substance (often particulate in nature) and is completely reversible after exposure ceases. The disorder is characterised by dyspnea, cough and mucus production. Exposure to hydrogen peroxide via the skin or oral route can produce toxic effects. Animal studies have shown evidence of damage to the kidney, gut, thymus and liver. Stomach and intestinal lesions including benign and malignant cancers have been observed in mice. It may produce genetic and developmental defects but no reproductive toxicity was reported in mice. The substance is classified by IARC as Group 3:
NOT classifiable as to its carcinogenicity to humans.

Evidence of carcinogenicity may be inadequate or limited in animal testing.

Exposure Limits

No Data Available

Biological Limits

No information available on biological limit values for this product.

Engineering Measures

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Adequate ventilation should be provided so that exposure limits are not exceeded.

Personal Protection Equipment

RESPIRATOR: If workplace exposure limit is exceeded apply Respiratory protective equipment. If open handling is unavoidable wear self-contained breathing apparatus: Respirator with A2B2E2K192 combination filter (Draeger); ABEK2P3 combination filter (3M); or OV/AG combination filter (3M) (AS1715/1716).
EYES: Tight fitting chemical splash goggles and full face shield or basket shaped glasses (AS1336/1337).
HANDS: Glove material Natural rubber (NR), Material thickness 1 mm. Break through time > 480 min. Method DIN EN 374
Glove material Nitrile, Material thickness 0,33 mm. Break through time > 480 min. Method DIN EN 374
Glove material butyl-rubber, Material thickness 0,7 mm. Break through time > 480 min. Method DIN EN 374 (AS2161).
CLOTHING: Wear protective, acid proof clothing. Suitable materials are: PVC, Neoprene, Nitrile rubber (NBR), rubber. Rubber or plastic boots. (AS3765/2210).

Work Hygienic Practices

Do not inhale vapour, aerosols, mist.
Avoid contact with skin, eyes and clothing. Ensure there is good room ventilation.
No eating, drinking, smoking, or snuffing tobacco at work. Wash face and/or hands before break and end of work. Preventive skin protection
Avoid contaminating clothes with product.
Immediately change moistened and saturated work clothes.
Immediately rinse contaminated or saturated clothing with water. Any contaminated protective equipment is to be cleaned after use.
Handle in accordance with good industrial hygiene and safety practice. Wear suitable protective clothing, gloves and eye/face protection.

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9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Liquid
Appearance	Water-like liquid
Odour	Slightly sharp odour
Colour	Colourless, Clear
pH	2 - 4
Vapour Pressure	0.6 (@30°C)
Relative Vapour Density	No Data Available
Boiling Point	106 (as 30%) °C
Melting Point	-25 (as 30%) °C
Freezing Point	No Data Available
Solubility	Miscible
Specific Gravity	1.134 - 1.195
Flash Point	Does not flash
Auto Ignition Temp	No Data Available
Evaporation Rate	<1
Bulk Density	No Data Available
Corrosion Rate	No Data Available
Decomposition Temperature	No Data Available
Density	1,132 g/cm ³
Specific Heat	No Data Available
Molecular Weight	34.02 g/mol
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available

Partition Coefficient No Data Available

Saturated Vapour Concentration No Data Available

Vapour Temperature No Data Available

Viscosity 1.8 mPa.s (@0°C)

Volatile Percent No Data Available

VOC Volume No Data Available

Additional Characteristics No Data Available

Potential for Dust Explosion
Product is liquid

Fast or Intensely Burning Characteristics

Flame Propagation or Burning Rate of Solid Materials

Non-Flammables That Could Contribute Unusual Hazards to a Fire

Properties That May Initiate or Contribute to Fire Intensity

Risk of overpressure and burst due to decomposition in confined spaces and pipes. With large-scale fire, violent decomposition or even explosion is possible.

Mixtures with organic materials (e.g. solvents) can display explosive properties. No Data Available

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No Data Available

No Data Available

Reactions That Release Gases or No Data Available

Vapours

Release of Invisible Flammable Vapours and Gases

No Data Available

10. STABILITY AND REACTIVITY

General Information	Product is a(n) oxidizing agent and reactive. Unstable in the presence of incompatible materials.
Chemical Stability	Stable under recommended storage conditions. Commercial products are stabilised to reduce risk of decomposition due to contamination.
Conditions to Avoid	Sun rays, heat, heat effect.
Materials to Avoid	Reacts violently with reducing agents, alcohols, ammonia, carboxylic acids, acetic acid, cobalt oxides, copper(II) chloride, ethers, metal powder, permanganates, acetone, benzenesulfonic anhydride, 1,1-dimethylhydrazine, dimethylphenylphosphine, gadolinium hydroxide, hydrogen selenide, iron oxides, lithium tetrahydroaluminate, magnesium tetrahydroaluminate, manganese(II) oxide, mercury oxide, methyl hydrazine, nickel monoxide, nitrogenous bases, osmium tetroxide, alpha-phenylselenoketones, phosphorus, phosphorus(V) oxide, quinoline, tetrahydrothiophene, tin(II) chloride, thiodiglycol, thiophane, tin(II) chloride, unsaturated organic compounds, readily oxidisable and combustible materials; avoid contact with combustibles including lubricants and graphite. reacts with cobalt, copper and its alloys, chromium, iridium, iron, lead, manganese, Monel, osmium, palladium, platinum, gold, silver, zinc, and other catalytic metals, metal oxides and salts - avoid metallic bowls and stirrers. violent catalytic decomposition will occur in contact with certain metals such as iron, copper, chromium, brass, bronze, lead, silver, manganese or their salts. forms unstable and possible explosive materials with acetic anhydride, acetic acid, aniline, carboxylic acids, 1,4-diazabicyclo[2,2,2]octane, diphenyl diselenide, ethylacetate, glycols, ketene, ketones, triethyltin hydroperoxide, 1,3,5-trioxane, vinyl acetate. Is incompatible with mercurous chloride decomposes in presence of alkalis and even ordinary dust or rust decomposes slowly at ordinary temperatures and builds up pressure in a closed container; the rate of decomposition doubles for each 10 deg C rise in temperature and decomposition becomes self-sustaining at 141 deg. C contact with rough surfaces can cause decomposition. Attacks and may ignite some plastics, rubber and coatings. Avoid any contamination of this material as it is very reactive and any contamination is potentially hazardous Hazardous Decomposition Products

Solutions of hydrogen peroxide slowly decompose, releasing oxygen, and so are often stabilised by the addition of acetanilide, etc.

Hazardous Polymerisation Hazardous polymerisation will not occur.

11. TOXICOLOGICAL INFORMATION

General Information	dermal (rat) LD50: 3000-5480 mg/kg Inhalation (rat) LC50: 2 mg/L/4H Oral (rat) LD50: 75 mg/kg
	Acute inhalation toxicity: LC50 rat: > 0.17 mg/l / 4 h. Method: literature. Test substance: hydrogen peroxide, 50%. The maximum dose attainable under experimental conditions no fatalities.
	Acute dermal toxicity: LD50 rabbit: > 6500 mg/kg. Method: literature. Test substance: Hydrogen peroxide 70%. Skin irritation rabbit: Slightly irritating. Method: literature
	Eye irritation rabbit: Corrosive. Method: literature
	Sensitization guinea pig: Not sensitising. Method: literature
	Repeated dose toxicity: Mouse(female): Testing period: 90 d. Subsequent observation period: 6 weeks. Target organ/effect: Changes of parameters of the blood, body weight development negative.

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Irritative effect: Gastrointestinal tract. Method: OECD TG 408. Drinking water analysis.

Mouse(male): Testing period: 90 d. Subsequent observation period: 6 weeks.
Target organ/effect: Changes of parameters of the blood, body weight development negative.
Irritative effect: Gastrointestinal tract. Method: OECD TG 408. Drinking water analysis

Gentoxicity in vitro

Microorganisms, cell cultures. Mutagenic/genotoxic effects. Method: literature. In the presence of metabolic systems no mutagenic effects were observed.

Gentoxicity in vivo

Micronucleus test mouse intraperitoneal (i.p.): Negative. Method: OECD TG 474

Micronucleus test mouse Oral: Negative. Method: literature

Unscheduled DNA synthesis -test (UDS) rat: Negative. Method: literature

Carcinogenicity assessment

Clues to possible carcinogenic effects in animal experiments: Up to date there is no evidence of increased tumour risk. Hydrogen peroxide is not a carcinogenic substance according to MAK, IARC, NTP, OSHA, ACGIH.

Eyelrritant

Hydrogen peroxide concentrations above 10% are corrosive to the eye and may cause corneal ulceration even days after exposure. The material can produce chemical burns to the eye following direct contact. Vapours or mists may be extremely irritating.

Ingestion

Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual.

Hydrogen peroxide may cause blistering and bleeding from the throat and stomach. When swallowed, it may release large quantities of oxygen which could hyper-distend the stomach and gut and may cause internal bleeding, mouth and throat burns and rupture of the gut. There may also be fever, nausea, foaming at the mouth, vomiting, chest and stomach pain, loss of consciousness, and movement disorders and death. Large amounts can also cause cessation of breath, dizziness, headache, tremors weakness or numbness in the extremities and convulsions. Hydrogen peroxide concentrate is corrosive and must not be taken undiluted.

The material can produce severe chemical burns within the oral cavity and gastrointestinal tract following ingestion.

Inhalation

Inhalation of aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful. Inhalation of quantities of liquid mist may be extremely hazardous, even lethal due to spasm, extreme irritation of larynx and bronchi, chemical pneumonitis and pulmonary oedema.

Inhaling excessive levels of mist may result in headache, dizziness, vomiting, diarrhoea, irritability, sleeplessness and fluid in the lungs, and cause extreme

irritation of the nose and chest, cough, discomfort, shortness of breath and inflammation of the nose and throat.

Whole-body effects of hydrogen peroxide

poisoning include tremor, numbness of the limbs, convulsions, coma and shock. Hydrogen peroxide has poor warning properties

SkinIrritant

Skin contact will result in rapid drying, bleaching, leading to chemical burns on prolonged contact

Reactions may not occur on exposure but response may be delayed with symptoms only appearing many hours

Chroniclateral. Open cuts, abraded or irritated skin should not be exposed to this material

Entry into the blood-stream, through, for example, cuts, abrasions or lesions, may produce systemic injury with harmful effects. Examine the skin prior to the use of the material and ensure that any

external damage is suitably protected. The material can produce chemical burns following direct contact with the skin. **Other** Hydrogen peroxide as a human food additive is generally regarded as safe when used in certain limitations. In experimental animals, oral administration of hydrogen peroxide causes dental, liver, kidney, stomach, and intestinal damage. Inhalation exposure to hydrogen peroxide caused skin

irritation and sneezing in dogs, and high mortality in mice.

Hydrogen peroxide added to food is affirmed to be generally regarded as safe (GRAS) by the U.S. FDA when used to treat certain foods in specified limitations [FDA 21 CFR 184.1366 (4/1/93)].

Hydrogen peroxide may be used as a component of articles for use in packaging, handling, transporting, or holding food in accordance with prescribed conditions [FDA 21 CFR 175.105 (4/1/93)].

Dose-related growth retardation, induction of dental caries, and pathological changes in the periodontium were observed in young male rats receiving 1.5% hydrogen peroxide as their drinking fluid (equivalent to approximately 2.1 g/kg/day)² for 8 weeks.

Effects observed in mice treated for 35 weeks with 0.15% hydrogen peroxide as their drinking fluid (equivalent to approximately 0.29 g/kg/day)³ included degeneration of hepatic and renal tubular epithelial tissues, necrosis, inflammation, irregularities of tissue structure of the stomach wall, and hypertrophy of the small intestine wall.

Concentrations in excess of 1% (equivalent to approximately 1.9 g/kg/day)⁴ resulted in pronounced weight loss and death within two weeks. In a sequential study of mice treated with 0.4% hydrogen peroxide in drinking water (equivalent to approximately 0.76 g/kg/day)⁵, gastric erosion was observed at 30 days and was present consistently throughout the 108 week study period.

Dogs exposed 6 hours/day, 5 days/week for 6 months at an average vapour concentration of 7 ppm (9.73 mg/3) of 90% hydrogen peroxide, developed skin irritation, sneezing, lacrimation, and bleaching of the hair. Autopsy disclosed pulmonary irritation and greatly thickened skin, but no hair follicle destruction.

No significant changes in blood or urinary parameters were observed.

Following eight 6-hour exposures to hydrogen peroxide at a concentration of 79 mg/m³ (56.88 ppm), 7/9 mice died.

Following exposure to hydrogen peroxide at 93 mg/m³, 6 hours/day, 5 days/week

for 30 exposures, 1/10 rats died. Repeated or prolonged exposure to acids may result in the

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erosion of teeth, swelling and/or ulceration of mouth lining. Irritation of airways to lung, with cough, and inflammation of lung tissue often occurs.

Carcinogen Category No Data Available

12. ECOLOGICAL INFORMATION

Ecotoxicity Toxicity to fish:
hydrogen peroxide LC50 96 Fish 0.020mg/L
hydrogen peroxide EC50 3 Algae or other aquatic plants
0.27mg/L hydrogen peroxide EC50 48 Crustacea
2.32mg/L hydrogen peroxide EC50 72 Algae or other
aquatic plants 0.71mg/L hydrogen peroxide NOEC 192
Fish 0.028mg/L Persistence/Degradability

Photochemical degradation (air) takes place. Under ambient conditions quick hydrolysis, reduction or decomposition occurs. The following substances are formed: oxygen and water.

Mobility hydrogen peroxide LOW (KOC = 14.3)

Environmental Fate Do NOT let product reach waterways, drains

and sewers. **Bioaccumulation Potential** hydrogen peroxide LOW (LogKOW = -

1.571) **Environmental Impact** No Data Available

13. DISPOSAL CONSIDERATIONS

General Information Dispose of in accordance with all local, state and federal regulations.
All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility.

Special Precautions for Land Fill

Contact a specialist disposal company or the local waste regulator for advice.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG

Proper Shipping Name	HYDROGEN PEROXIDE, AQUEOUS SOLUTION with not less than 20% but not more than 60% hydrogen peroxide (stabilized as necessary)
Class	5.1 Oxidising Substances
Subsidiary Risk(s)	8 Corrosive Substances
EPG	31 Oxidizing Substances
UN Number	2014
Hazchem	2P
Pack Group	II
Special Provision	No Data Available

Sea Transport

IMDG

Proper Shipping Name	HYDROGEN PEROXIDE, AQUEOUS SOLUTION with not less than 20% but not more than 60% hydrogen peroxide (stabilized as necessary)
Class	5.1 Oxidising Substances
Subsidiary Risk(s)	8 Corrosive Substances
UN Number	2014
Hazchem	2P
Pack Group	II
Special Provision	No Data Available
EMS	FH, SQ
Marine Pollutant	Yes

Air Transport

IATA

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Proper Shipping Name	Hydrogen peroxide, aqueous solution with 20% or more but 40% or less hydrogen peroxide (stabilised as necessary)
Class	5.1 Oxidising Substances
Subsidiary Risk(s)	8 Corrosive Substances
UN Number	2014
Hazchem	2P
Pack Group	II
Special Provision	No Data Available

Air Transport IATA

Proper Shipping Name	Hydrogen peroxide, aqueous solution with more than 40% but 60% or less hydrogen peroxide (stabilised as necessary)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	A2; A75
Comments	FORBIDDEN FOR AIR TRANSPORT

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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15. REGULATORY INFORMATION

General Information	No Data Available
Poisons Schedule (Aust)	6

National/Regional Inventories

Australia (AICS)	Listed
Canada (DSL)	Listed
Canada (NDSL)	Not Determined
China (IECSC)	Listed
Europe (EINECS)	Not Determined
Europe (REACH)	Not Determined
Japan (ENCS/METI)	Not Determined
Korea (KECI)	Listed
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Listed
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	

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Not Determined

Taiwan (NCSR)

Not Determined

USA (TSCA)

Listed

16. OTHER INFORMATION

Additional Information ABBREVIATIONS:

ADB - Air-Dry Basis.

BEI - Biological Exposure Indice(s)

CAS# - Chemical Abstract Service number - used to uniquely identify chemical compounds. CNS - Central Nervous System.

EINECS - European Inventory of Existing Commercial Substances. GHS – Globally Harmonized System

IARC - International Agency for Research on Cancer. M - moles per litre, a unit of concentration.

mg/m³ - Milligrams per cubic meter. NOS - Not Otherwise Specified.

NTP - National Toxicology Program.

OSHA - Occupational Safety and Health Administration.

pH - relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).

ppm - Parts Per Million.

RTECS - Registry of Toxic Effects of Chemical Substances.

TWA/ES - Time Weighted Average or Exposure Standard.

HEALTH EFFECTS FROM EXPOSURE:

It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a Clean Plus Chemicals report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:

The recommendation for protective equipment contained within this Clean Plus Chemicals report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

Report Status

This Safety Data Sheet document has been compiled by Clean Plus Chemicals. Further clarification regarding any aspect of this product should contact Clean Plus Chemicals directly. While Clean Plus Chemicals has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, Clean Plus Chemicals accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.