

Section 1 - Identification Of Chemical Product And Company

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Substance: Formaldehyde solution.
Trade Name: Permaglo
Product Use: Undertaker's reagent; arterial embalming chemical.
Creation Date: December, 2002
Revision Date: February, 2008

Section 2 - Hazards Identification

Statement of Hazardous Nature

This product is classified as: Hazardous according to the criteria of ASCC Australia.

Not a Dangerous Good according to the Australian Dangerous Goods (ADG) Code.

Risk Phrases: R40, R41, R43, R20/21/22, R37/38. Harmful: possible risk of irreversible effects. Risk of serious damage to eyes. May cause sensitisation by skin contact. Harmful by inhalation, in contact with skin, and if swallowed. Irritating respiratory system and skin.

Safety Phrases: S20, S23, S28, S38, S24/25, S36/37. When using, do not eat or drink. Do not breathe vapours or mists. After contact with skin, wash immediately with plenty of water. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin and eyes. Wear suitable protective clothing and gloves.

SUSDP Classification: S6

ADG Classification: None allocated. Not a Dangerous Good.

UN Number: None allocated

Emergency Overview

Physical Description & colour: Clear, fluorescent pink-orange liquid.

Odour: Slightly perfumed, somewhat pungent odour.

Major Health Hazards: may cause irreversible effects, harmful by inhalation, in contact with skin, and if swallowed, irritating to eyes, respiratory system and skin, possible skin sensitiser.

Potential Health Effects

Formaldehyde vapour causes irritation of eyes nose and respiratory tract. Aqueous formaldehyde is an eye and skin irritant as well as a strong sensitiser.

In concentrated form, formaldehyde is toxic by inhalation, in contact with skin and if swallowed; causes burns; may cause sensitisation by skin contact.

Clinical signs of toxicity, observed following single exposure of formaldehyde vapour at concentrations >100 ppm (>120 mg/m³) were hypersalivation, acute dyspnoea, vomiting, muscular spasms, and death. In rats, rhinitis, epithelial dysplasia and squamous metaplasia of the nasal tract was observed at 2 ppm and above.

Methanol poison: SYMPTOMATOLOGY:

- 1 A latency usually of 12-18 hours, during which time the only clinical signs are those of a generally mild and transient state of inebriation as after ethanol.
2. Headache, anorexia, weakness, fatigue, leg cramps, vertigo, restlessness.
3. Nausea, occasionally vomiting and diarrhoea. Violent abdominal pain, back pain, leg pain.
4. Apathy or delirium progressing sometimes rapidly to coma. Rarely excitement, mania, and convulsions.
5. Dimness of vision with dilated pupils, reacting poorly, if at all, to light, followed often by bilateral blindness (transient or permanent). Eyes are often sensitive to pressure, and eye movements are painful.
6. Breathing is rapid and shallow, not usually deep and laboured as seen in other types of metabolic acidosis.
7. Mild tachycardia is common, but the blood pressure is usually well maintained.
8. Death in coma is due to respiratory failure or rarely to circulatory collapse.
9. Protracted convalescence with asthenia. Blindness is usually permanent.

Inhalation

Short term exposure: Available data shows that this product is harmful. May cause central nervous system depression. In addition product is an inhalation irritant. Symptoms may include headache, irritation of nose and throat

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and increased secretion of mucous in the nose and throat. Other symptoms such as bronchopneumonia and oedema may also become evident.

Long Term exposure: No data for health effects associated with long term inhalation.

Skin Contact:

Short term exposure: Available data shows that this product is harmful. In addition product is a skin irritant. Symptoms may include itchiness and reddening of contacted skin. May cause skin drying, cracking and scaling, hardening or tanning.

Long Term exposure: No data for health effects associated with long term skin exposure.

Eye Contact:

Short term exposure: Available data shows that this product is an eye irritant. Symptoms may include stinging and reddening of eyes and watering which may become copious. Other symptoms may also become evident. If exposure is brief, symptoms should disappear once exposure has ceased. However, lengthy exposure or delayed treatment may cause permanent damage.

Long Term exposure: No data for health effects associated with long term eye exposure.

Ingestion:

Short term exposure: Available data shows that this product is harmful. Methanol will, if ingested, cause irreversible blindness. Causes severe irritation of mouth, throat and stomach. This product is an oral irritant. Symptoms may include burning sensation and reddening of skin in mouth and throat. Other symptoms may also become evident, but all should disappear once exposure has ceased.

Long Term exposure: No data for health effects associated with long term ingestion.

Carcinogen Status:

ASCC: Formaldehyde is classed by ASCC as likely to be carcinogenic to humans.

NTP: Formaldehyde is classed by NTP as reasonably anticipated to be a Human carcinogen.

IARC: Formaldehyde is classed by IARC as probably carcinogenic to humans.

Section 3 - Composition/Information on Ingredients

| Ingredients | CAS No | Conc, % | TWA (mg/m ³) | STEL (mg/m ³) |
|---------------------------------|---------|---------|--------------------------|---------------------------|
| Formaldehyde | 50-00-0 | 23 | 1.2 | 2.5 |
| Methanol | 67-56-1 | 8 | 262 | 328 |
| Other non hazardous ingredients | secret | to 100 | not set | not set |

This is a commercial product whose exact ratio of components may vary slightly. Minor quantities of other non hazardous ingredients are also possible.

The TWA exposure value is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week. The STEL (Short Term Exposure Limit) is an exposure value that should not be exceeded for more than 15 minutes and should not be repeated for more than 4 times per day. There should be at least 60 minutes between successive exposures at the STEL. The term "peak" is used when the TWA limit, because of the rapid action of the substance, should never be exceeded, even briefly.

Section 4 - First Aid Measures

General Information:

You should call The Poisons Information Centre if you feel that you may have been poisoned, burned or irritated by this product. The number is 13 1126 from anywhere in Australia (0800 764 766 in New Zealand) and is available at all times. Have this MSDS with you when you call.

Inhalation: If symptoms of poisoning become evident, contact a Poisons Information Centre, or call a doctor at once. Remove source of contamination or move victim to fresh air. If breathing is difficult, oxygen may be beneficial if administered by trained personnel, preferably on a doctor's advice. DO NOT allow victim to move about unnecessarily. Symptoms of pulmonary oedema can be delayed up to 48 hours after exposure.

Skin Contact: If significant skin contact occurs, wash gently and thoroughly with water (use non-abrasive soap if necessary) for 10 minutes or until chemical is removed. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands and belts). Contact a Poisons Information Centre, or call a doctor.

Eye Contact: Quickly and gently blot or brush away product. Immediately flush the contaminated eye(s) with lukewarm, gently flowing water until the product is removed or until a few minutes after irritation has ceased, while holding the eyelid(s) open. Take care not to rinse contaminated water into the unaffected eye or onto the face.

Ingestion: If swallowed, do NOT induce vomiting. Wash mouth with water and contact a Poisons Information Centre, or call a doctor.

Section 5 - Fire Fighting Measures

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Fire and Explosion Hazards: This product is classified as a C1 combustible product. There is a slight risk of an explosion from this product if commercial quantities are involved in a fire. Vapours from this product are heavier than air and may accumulate in sumps, pits and other low-lying spaces, forming potentially explosive mixtures. They may also flash back considerable distances.

Fire decomposition products from this product may be toxic if inhaled. Take appropriate protective measures.

Extinguishing Media: Preferred extinguishing media are carbon dioxide, dry chemical, foam, water fog. Water fog or fine spray is the preferred medium for large fires.

Fire Fighting: If a significant quantity of this product is involved in a fire, call the fire brigade.

Flash point: 62-64°C

Upper Flammability Limit: 73% (based on formaldehyde solutions)

Lower Flammability Limit: 7%

Autoignition temperature: No data.

Flammability Class: C1

Section 6 - Accidental Release Measures

Accidental release: In the event of a major spill, prevent spillage from entering drains or water courses.

Immediately call the Fire Brigade. Wear full protective clothing including face mask, face shield and gauntlets. All skin areas should be covered. See above under Personal Protection regarding Australian Standards relating to personal protective equipment. Suitable materials for protective clothing include rubber, PVC. Stop leak if safe to do so, and contain spill. Absorb onto sand, vermiculite or other suitable absorbent material. If spill is too large or if absorbent material is not available, try to create a dike to stop material spreading or going into drains or waterways. Because of the environmentally hazardous nature of this product, special care should be taken to restrict release to waterways or drains. Sweep up and shovel or collect recoverable product into labelled containers for recycling or salvage, and dispose of promptly. Recycle containers wherever possible after careful cleaning. After spills, wash area preventing runoff from entering drains. If a significant quantity of material enters drains, advise emergency services. This material may be suitable for approved landfill. Ensure legality of disposal by consulting regulations prior to disposal.

Thoroughly launder protective clothing before storage or re-use. Advise laundry of nature of contamination when sending contaminated clothing to laundry.

Formaldehyde may be decomposed (neutralised) with a dilute (<5%) solution of ammonia or sodium sulfite.

Section 7 - Handling and Storage

Handling: Keep exposure to this product to a minimum, and minimise the quantities kept in work areas. Check Section 8 of this MSDS for details of personal protective measures, and make sure that those measures are followed. The measures detailed below under "Storage" should be followed during handling in order to minimise risks to persons using the product in the workplace. Also, avoid contact or contamination of product with incompatible materials listed in Section 10. Exposure to cold conditions may cause increased cloudiness and precipitation of polymers which will redissolve on gentle heating.

Storage: This product is a Scheduled Poison. Observe all relevant regulations regarding sale, transport and storage of this class of poison. Check packaging - there may be further storage instructions on the label.

Section 8 - Exposure Controls and Personal Protection

The following Australian Standards will provide general advice regarding safety clothing and equipment:

Respiratory equipment: **AS/NZS 1715**, Protective Gloves: **AS 2161**, Industrial Clothing: **AS2919**, Industrial Eye Protection: **AS1336** and **AS/NZS 1337**, Occupational Protective Footwear: **AS/NZS2210**.

| Exposure Limits | TWA (mg/m ³) | STEL (mg/m ³) |
|-----------------|--------------------------|---------------------------|
| Formaldehyde | 1.2 | 2.5 |
| Methanol | 262 | 328 |

Ventilation: This product should only be used in a well ventilated area. If natural ventilation is inadequate, use of a fan is suggested.

Eye Protection: Protective glasses or goggles should be worn when this product is being used. Failure to protect your eyes may cause them harm. Emergency eye wash facilities are also recommended in an area close to where this product is being used.

Skin Protection: Prevent skin contact by wearing impervious gloves, clothes and, preferably, apron. Make sure that all skin areas are covered. See below for suitable material types.

Protective Material Types: We suggest that protective clothing be made from the following materials: rubber, PVC.

Respirator: Usually, no respirator is necessary when using this product. However, if you have any doubts consult the Australian Standard mentioned above.

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Eyebaths or eyewash stations and safety deluge showers should be provided near to where this product is being used.

Section 9 - Physical and Chemical Properties:

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|---|--|
| Physical Description & colour: | Clear, fluorescent pink-orange liquid. |
| Odour: | Slightly perfumed, somewhat pungent odour. |
| Boiling Point: | 94-97°C at 100kPa |
| Freezing/Melting Point: | No specific data. Liquid at normal temperatures. |
| Volatiles: | 99% |
| Vapour Pressure: | No data. |
| Vapour Density: | No data. |
| Specific Gravity: | 1.055-1.065 at 20°C |
| Water Solubility: | Completely soluble. |
| pH: | 8.0-9.5 |
| Volatility: | No data. |
| Odour Threshold: | No data. |
| Evaporation Rate: | No data. |
| Coeff Oil/water distribution: | No data |
| Autoignition temp: | No data. |

Section 10 - Stability and Reactivity

Reactivity: This product is unlikely to react or decompose under normal storage conditions. However, if you have any doubts, contact the supplier for advice on shelf life properties.

Conditions to Avoid: This product should be kept in a cool place, preferably below 30°C. Keep away from sources of sparks or ignition. Handle and open containers carefully.

Incompatibilities: strong acids, strong bases, strong oxidising agents, phenol.

Fire Decomposition: Carbon dioxide, and if combustion is incomplete, carbon monoxide and smoke. Water. Carbon monoxide poisoning produces headache, weakness, nausea, dizziness, confusion, dimness of vision, disturbance of judgment, and unconsciousness followed by coma and death.

Polymerisation: This product is unlikely to undergo polymerisation processes.

Section 11 - Toxicological Information

Local Effects:

Target Organs: There is no data to hand indicating any particular target organs.

Classification of Hazardous Ingredients

| Ingredient | Risk Phrases |
|--------------|--|
| Formaldehyde | ≥5%Conc≤25%: Xn; R40 R20/21/22 R36/37/38 R43 |
| Methanol | >=3%Conc<10%: Xn; R20/21/22; R68/20/21/22 |

A comprehensive report on formaldehyde was prepared by NICNAS and released in November 2006. It may be found at http://www.nicnas.gov.au/Publications/CAR/PEC/PEC28/PEC_28_Full_Report_PDF.pdf

Chronic toxicity

Based on the available human and animal data formaldehyde does not meet the Approved Criteria for classification as causing serious damage to health by prolonged exposure through inhalation, ingestion or dermal contact, including classification as a mutagenic substance, a reprotoxicant or a developmental toxicant. However, it meets the Approved Criteria for classification as a Category 2 carcinogen; may cause nasal cancer by inhalation.

Section 12 - Ecological Information

The daytime half-life of formaldehyde in ambient air is generally short. The calculated half-life of formaldehyde by photolysis is about 4 hours, but is longer lived at night time.

It is expected that formaldehyde will be degraded relatively rapidly in sewage treatment plants and in surface water. The aqueous anaerobic half-life times are predicted to be from 1 to 7 days in unacclimated sludge. The estimated half-life times in surface water are 24-168 hours, and in groundwater are 48 to 336 hours.

The high water solubility and low partition coefficient (maximum Log Kow of 0.35) indicates a low potential for adsorption onto suspended sediments in the soil solution or in aqueous environments. Aqueous solutions of formaldehyde released into soil through spills or disposal would be expected to infiltrate into the soil, from where it

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may leach into surface and ground water. However, since formaldehyde is susceptible to biodegradation by a range of micro-organisms, it is expected to be readily degraded, and not accumulate. Studies estimate a soil half-life of 24 to 168 hours, based on the estimated aqueous aerobic biodegradation half-lives.

Formaldehyde occurs naturally in plants and animals, and is readily metabolised by organisms.

For aquatic organisms, the available data indicate daphnia to be the most sensitive species, (EC_{50} 5.8 mg/L). The most sensitive fish species is striped bass, (LC_{50} 16.9 mg/L). The responses of various species of amphibians are similar to those of fish, with LC_{50} ranging from 10 to 20 mg/L. While no EC_{50} endpoints are available, the data suggest that formaldehyde is only slightly to moderately acutely toxic to aquatic plants and algae.

For terrestrial organisms, the available data indicate that formaldehyde is practically non-toxic to birds exposed to formaldehyde in food.

Methanol also is considered to be biodegradable.

Section 13 - Disposal Considerations

Disposal: Containers should be emptied as completely as practical before disposal. If possible, recycle containers either in-house or send to recycle company. If this is not practical, send to a commercial waste disposal site. Please do NOT dispose into sewers or waterways.

Section 14 - Transport Information

ADG Code: This product is not classified as a Dangerous Good when carried by road or rail. No special transport conditions are necessary unless required by other regulations.

However, for Air transport, classified as UN 3334 "Aviation regulated liquid, n.o.s. (formaldehyde)", DG Class 9.

Section 15 - Regulatory Information

AICS: All of the significant ingredients in this formulation are to be found in the public AICS Database.

Section 16 - Other Information

This MSDS contains only safety-related information. For other data see product literature.

Acronyms:

| | |
|-----------------------|---|
| ADG Code | Australian Code for the Transport of Dangerous Goods by Road and Rail, 7th Edition |
| AICS | Australian Inventory of Chemical Substances |
| CAS number | Chemical Abstracts Service Registry Number |
| Hazchem Number | Emergency action code of numbers and letters that provide information to emergency services especially firefighters |
| IARC | International Agency for Research on Cancer |
| ASCC | Office of the Australian Safety and Compensation Council |
| NOS | Not otherwise specified |
| NTP | National Toxicology Program (USA) |
| R-Phrase | Risk Phrase |
| SUSDP | Standard for the Uniform Scheduling of Drugs & Poisons |
| UN Number | United Nations Number |

THIS MSDS SUMMARISES OUR BEST KNOWLEDGE OF THE HEALTH AND SAFETY HAZARD INFORMATION OF THE PRODUCT AND HOW TO SAFELY HANDLE AND USE THE PRODUCT IN THE WORKPLACE. EACH USER MUST REVIEW THIS MSDS IN THE CONTEXT OF HOW THE PRODUCT WILL BE HANDLED AND USED IN THE WORKPLACE.

IF CLARIFICATION OR FURTHER INFORMATION IS NEEDED TO ENSURE THAT AN APPROPRIATE RISK ASSESSMENT CAN BE MADE, THE USER SHOULD CONTACT THIS COMPANY SO WE CAN ATTEMPT TO OBTAIN ADDITIONAL INFORMATION FROM OUR SUPPLIERS. OUR RESPONSIBILITY FOR PRODUCTS SOLD IS SUBJECT TO OUR STANDARD TERMS AND CONDITIONS, A COPY OF WHICH IS SENT TO OUR CUSTOMERS AND IS ALSO AVAILABLE ON REQUEST.

Please read all labels carefully before using product.

This MSDS is prepared in accord with the ASCC document "National Code of Practice for the Preparation of Material Safety Data Sheets" 2nd Edition [NOHSC:2001(2003)]

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