

Section 1 - Identification Of Chemical Product And Company

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Substance: Formaldehyde solution.
Trade Name: Permafix
Product Use: Undertaker's reagent; cavity embalming solution.
Creation Date: November, 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.

Dangerous according to the Australian Dangerous Goods (ADG) Code.

Risk Phrases: R10, R41, R40, R20/21/22, R36/37/38. Flammable. Risk of serious damage to eyes. Possible risk of irreversible effects. Harmful by inhalation, in contact with skin, and if swallowed. Irritating to eyes, respiratory system and skin.

Safety Phrases: S16, S20, S23, S36, S38, S24/25. Keep away from sources of ignition - No smoking. When using, do not eat or drink. Do not breathe vapour. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. Avoid contact with skin and eyes.

SUSDP Classification: S6

ADG Classification: Class 3 (FLAMMABLE LIQUID, N.O.S.)

UN Number: 1993

Emergency Overview

Physical Description & colour: Clear, straw coloured liquid.

Odour: Slightly perfumed, rather pungent odour.

Major Health Hazards: may cause serious damage to eyes, harmful by inhalation, in contact with skin, and if swallowed, irritating to eyes, respiratory system and skin.

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, but symptoms are not available. However product is a severe skin irritant. Symptoms may include extreme itchiness and reddening of contacted skin. Other symptoms such as blisters may also become evident, and may last long after exposure has ceased. 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 a severe eye irritant. Symptoms may include stinging and reddening of eyes and watering which may become copious. Other symptoms such as swelling of eyelids and blurred vision may also become evident. If exposure is brief, symptoms should disappear once exposure has ceased. However, lengthy exposure or delayed treatment is likely to 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	22	1.2	2.5
Methanol	67-56-1	13.5	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: Quickly and gently, blot or brush away excess chemical. Wash gently and thoroughly with water (use non-abrasive soap if necessary) for 20 minutes or until chemical is removed. Under running water, remove contaminated clothing, shoes and leather goods (e.g. watchbands and belts). If irritation persists, repeat flushing and obtain medical advice. Completely decontaminate clothing, shoes and leather goods before reuse or discard.

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, rinse mouth thoroughly with water and contact a Poisons Information Centre, or call a doctor at once. Give activated charcoal if instructed.

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Section 5 - Fire Fighting Measures

Fire and Explosion Hazards: This product is classified as a C1 combustible product. There is a moderate risk of an explosion from this product if commercial quantities are involved in a fire. Firefighters should take care and appropriate precautions. Any explosion will likely spread the fire to surrounding materials. Water spray may be used to cool drums involved in a fire, reducing the chances of an explosion. 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: Alcohol resistant foam is the preferred firefighting medium but, if it is not available, normal foam can be used. Try to contain spills, minimise spillage entering drains or water courses.

Fire Fighting: If a significant quantity of this product is involved in a fire, call the fire brigade. There is a danger of a violent reaction or explosion if significant quantities of this product are involved in a fire. Recommended personal protective equipment is full fire kit and breathing apparatus.

Flash point: 55-57°C

Upper Flammability Limit: 73%

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. Evacuate the spill area and deny entry to unnecessary and unprotected personnel. Immediately call the Fire Brigade. Wear full protective chemically resistant clothing including face mask, face shield, gauntlets and self contained breathing apparatus. 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. Avoid using sawdust or other combustible material. Because of the corrosiveness of this product, special personal care should be taken in any cleanup operation. 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. Store in a cool, well ventilated area, and make sure that surrounding electrical devices and switches are suitable. Check containers periodically for leaks. Containers should be kept closed in order to minimise contamination and possible evaporation. Make sure that the product does not come into contact with substances listed under "Materials to avoid" in Section 10. If you keep more than 1000L of flammable liquids of Packaging Group III, you probably require a license to do so. If you have any doubts, we suggest you contact your licensing authority in order to clarify your obligations. 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

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Methanol

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Ventilation: No special ventilation requirements are normally necessary for this product. However make sure that the work environment remains clean and that dusts are minimised.

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.

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:

Physical Description & colour:	Clear, straw coloured liquid.
Odour:	Slightly perfumed, rather pungent odour.
Boiling Point:	88-90°C at 100kPa
Freezing/Melting Point:	No specific data. Liquid at normal temperatures.
Volatiles:	98%
Vapour Pressure:	No data.
Vapour Density:	No data.
Specific Gravity:	1.04-4.06
Water Solubility:	Completely soluble.
pH:	5.8-6.8
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. Any electrical equipment in the area of this product should be flame proofed.

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	≥10%Conc<20%: T; R20/21/22; R39/23/24/25

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

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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 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: 1993, FLAMMABLE LIQUID, N.O.S.

Hazchem Code: 3Y

Special Provisions: 223, 274

Limited quantities: ADG 7 specifies a Limited Quantity value of 5 L for this class of product.

Dangerous Goods Class: Class 3, Flammable liquids.

Packaging Group: III

Packaging Method: P001, IBC03, LP01

Class 3 Flammable Liquids shall not be loaded in the same vehicle or packed in the same freight container with Classes 1 (Explosives), 2.1 (Flammable Gases where flammable liquids and flammable gases are both in bulk), 2.3 (Toxic Gases), 4.2 (Spontaneously Combustible Substances), 5.1 (Oxidising Agents), 5.2 (Organic Peroxides), 6 (Toxic Substances, except Flammable Liquid is nitromethane), and 7 (Radioactive Substances). They may however be loaded in the same vehicle or packed in the same freight container with Classes 2.1 (Flammable Gases except where the Flammable Liquids and Flammable Gases are in bulk), 2.2 (Non-Flammable Non-Toxic Gases), 4.1 (Flammable Solids), 4.3 (Dangerous When Wet Substances), 6 (Toxic Substances, except where Flammable Liquid is nitromethane), 8 (Corrosive Substances), 9 (Miscellaneous Dangerous Goods), Foodstuffs or foodstuff empties.

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

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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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