

Material Safety Data Sheet

Issue date: July 2004

Hazardous according to criteria of Worksafe Australia

Formaldehyde

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

COMPANY DETAILS:

Kendon Chemical & MNFG. Co. Pty Ltd
71 McClure Street
Thornbury, Vic, 3071
Phone: 03 9497 2822
Fax: 03 9499 7225

PRODUCT DETAILS:

Product Name: Formaldehyde

Synonyms: Formalin, Formol, Morbucid

Manufacturer's Product Code(s): A710

Use: Used as disinfectant, biocide and in manufacture of phenolic resins and adhesives. Renders casein, albumin and gelatin insoluble.

UN Number: 2209

Proper Shipping Name: FORMALDEHYDE SOLUTION

Dangerous Goods Class: 8

Subsidiary risk: None allocated

Packing Group: III

Hazchem Code: 2Z

2. COMPOSITION / INFORMATION ON INGREDIENTS

SUBSTANCE NAME	Proportion	CAS Number
FORMALDEHYDE	37%	50-00-0
METHANOL [METHYL ALCOHOL]	7%	67-56-1
FORMIC ACID (Below Cutoff)	0.03%	64-18-6
WATER	Balance	7732-18-5

3. HAZARD IDENTIFICATION

Hazardous according to the criteria of Worksafe Australia

Hazard Category: Harmful, Corrosive

ACUTE HEALTH EFFECTS

Swallowed:

Toxic if swallowed.

Will cause burns to the mouth, mucous membranes, throat, oesophagus and stomach. If sufficient quantities are ingested (swallowed) death may occur.

The methanol stabilizer in solutions is a cause of visual impairment and possible permanent blindness.

Eye:

Will cause burns to the eyes with effects including: Pain, tearing, conjunctivitis and if duration of exposure is long enough, blindness

will occur.

Skin:

Toxic by skin contact.

Will cause burns to the skin, with effects including; Redness, blistering, localised pain and dermatitis.

The material is capable of causing allergic skin reactions and may cause skin sensitisation. Toxic effects may result from skin absorption..

Inhaled:

Toxic if inhaled.

Will cause severe irritation to the nose, throat and respiratory system with effects including: Dizziness, headache, incoordination, chest pains, coughing, respiratory paralysis and or failure.

Chronic:

Some long term animal test data suggests a carcinogenic potential for the formaldehyde contained in these solutions. This was found to occur at levels which caused chronic tissue irritation, and was well above the exposure standard. These particular data are not considered relevant to normal use because these high concentrations would not be voluntarily tolerated by humans, but do emphasise the need for care in handling. Chronic exposure to methanol from skin contact, inhalation and/or swallowing, at concentrations greater than 1000ppm can result in permanent blindness and central nervous system effects.

Formaldehyde:

Reported fatal dose for humans: 60-90 mL

Oral LD50 (rat): 800 mg/kg

Inhalation LC50 (rat): 590 mg/m³

Low concentrations of formaldehyde may cause sensitisation by skin contact. Formaldehyde vapour is irritant to mucous membranes and respiratory tract. Asthma like symptoms have occasionally been reported following inhalation.

Animal studies have shown formaldehyde to cause carcinogenic effects. In particular, chronic inhalation studies in rats have shown the development of nasal cavity carcinomas at 6 and 15 ppm. These cancers developed at concentrations which produced chronic tissues irritation and would not be voluntarily tolerated by humans. [IPCS Environmental Health Criteria 89, Formaldehyde, World Health Organisation, Geneva, 1989.]

Some positive mutagenic effects have been reported for formaldehyde. Available animal data do not show embryotoxic or teratogenic effects following exposure to formaldehyde.

This material has been classified by the International Agency for Research on Cancer (IARC) as a **Group 2A agent. Group 2A - The agent is probably carcinogenic to humans.** [IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans. - Supplement 7, World Health Organisation, 1987].

Methanol

Oral LD50 (rat): 5628 mg/kg

Inhalation LC50 (rat): 64000 mg/kg / 4 hrs

Repeated or prolonged exposure to methanol could result in visual impairment and central nervous system effects.

4. FIRST AID MEASURES

Swallowed:

If swallowed, DO NOT induce vomiting. Seek urgent medical assistance.

Eye:

If material is splashed into eyes, flush with plenty of water for at least 15 minutes, ensuring eye lids are held open. Immediately transport to hospital or doctor.

Skin:

If material is splashed onto the skin, remove any contaminated clothing and wash skin thoroughly with water and soap if available.

Inhaled:

Remove victim to fresh air. Apply resuscitation if victim is not breathing - DO NOT USE DIRECT MOUTH - TO - MOUTH METHOD if victim ingested or inhaled substance; use alternative respiratory method or proper respiratory device -

First Aid Facilities:

Eye wash fountain, safety shower and normal wash room facilities.

Advice to Doctor:

For acute or short term repeated exposures to formaldehyde

INGESTION:

Patients present early with severe corrosion of the gastro-intestinal tract and systemic effects. Inflammation and ulceration may progress to strictures. Severe acidosis results from rapid conversion of formaldehyde to formic acid. Coma, hypotension, renal failure and apnoea complicate ingestion. Decontaminate by dilution with milk or water containing ammonium acetate; vomiting should be induced. Follow with gastric lavage using a weak ammonia solution (converts formaldehyde to relatively inert pentamethylenetetramine). Gastric lavage is warranted only in first 15 minutes following ingestion.

SKIN:

Formaldehyde can combine with with epidermal protein to produce a hapten-protein couples capable of sensitising T-lymphocytes. Subsequent exposures cause a type IV hypersensitivity reaction (ie allergic contact dermatitis).

5. FIRE-FIGHTING MEASURES

Fire/Explosion Hazard

CAUTION: Use of water spray when fighting fire may be inefficient.

EXTINGUISHING MEDIA: Use dry chemical, carbon dioxide, foam or water fog.

SPECIAL FIRE FIGHTING PROCEDURES: Self-contained breathing apparatus (SCBA) required for fire-fighting personnel. If possible to do so safely, shut off fuel to fire. Use water spray to spray to cool fire-exposed surfaces and to protect personnel.

UNUSUAL FIRE AND EXPLOSION HAZARDS: If tanks, drums or containers of this material are heated, they may rupture and project corrosive liquids over a wide area.

Formaldehyde vapourises readily from solution and is flammable in air.

Flammability

Combustible liquid and vapour. If involved in a fire generate noxious and corrosive fumes.

6. ACCIDENTAL RELEASE MEASURES

EMERGENCY ACTION:

Keep unnecessary people away; Isolate hazard area and deny entry. Stay upwind; Keep out of low areas. Isolate for 800 m in all directions if tank, rail car or tanker truck is involved in fire.

SPILL OR LEAK PROCEDURE:

Shut off ignition sources, no flares, smoking or flames in hazard area. Stop leak if you can do it without risk. Water spray may reduce vapour; but it may not prevent ignition in closed spaces.

SMALL SPILLS:

Take up with sand, dirt or vermiculite. DO NOT use sawdust. Use non-sparking tools. Place into labelled drum(s) for later disposal.

LARGE SPILLS: Notify Emergency Services (Police or Fire Brigade). Tell them location, nature and any information that would be helpful. Contain spill. Remove all ignition sources and safely stop flow of spill. Bund area. Trained personnel should wear Personal Protective equipment as highlighted in this MSDS. Blanket the spill with foam or use water fog to disperse vapour clouds. Consult an expert regarding disposal of this product.

7. HANDLING AND STORAGE

Store in a moderately warm place. Classified as **C1 (Combustible Liquid)** for the purpose of storage and handling.

Store away from sources of heat or ignition, strong alkalis, acids, combustibles and oxidizing agents. All equipment must be earthed. Store in original packages as approved by manufacturer. Check all fittings, valves, reticulation (piping) and any

ancillary equipment for leaks. A supplied air respirator or a Self-Contained Breathing Apparatus (SCBA) for emergencies should be available and checked regularly. For further information please refer to the Engineering Controls of this MSDS.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Standards

FORMALDEHYDE ...%

(Worksafe Australia)

[TWA]1 ppm 1.2 mg/m³

[STEL]2 ppm 2.5 mg/m³

Carcinogen Category: 2

Notices: H;R

(ACGIH)

[STEL]0.3 (Ceiling) 0.37 (Ceiling)

Carcinogen Category: A2

METHANOL [METHYL ALCOHOL]

(Worksafe Australia)

[TWA]200 ppm 262 mg/m³

[STEL]250 ppm 328 mg/m³

Notices: H

(ACGIH)

[TWA]200 ppm 262 mg/m³

[STEL]250 ppm 328 mg/m³

Notices: Sk

FORMIC ACID ... % (Below Cutoff)

(Worksafe Australia)

[TWA]5 ppm 9.4 mg/m³

[STEL]10 ppm 19 mg/m³

Notices: H

(ACGIH)

[TWA]5 ppm 9.4 mg/m³

[STEL]10 ppm 19 mg/m³

Engineering Controls

Corrosive liquid. Single significant exposure may cause severe injury. Maintain adequate ventilation at all times. Prevent accumulation of gas(es) in hollows or sumps. Eliminate any sources of ignition.

Exposure to this material may be controlled in a number of ways. The measures appropriate for a particular worksite depend on how the material is used and on the potential for exposure. Engineering methods to prevent or control exposure are preferred. Methods include process or personnel enclosure, mechanical ventilation (dilution and local exhaust), and control of process conditions. If engineering controls and work practices are not effective in preventing or controlling exposure, then suitable personal protective equipment, which is known to perform satisfactorily, should be used.

Personal Protection Equipment

CLOTHING: PVC, Nitrile, Neoprene, Natural rubber or any other type of apron or splash suit.

GLOVES: PVC, Nitrile, Neoprene, Natural rubber or any other type of glove.

EYES: Chemical goggles or faceshield to protect eyes.

RESPIRATORY PROTECTION: Avoid breathing of gases. Select and use respirators in accordance with AS/NZS 1715/1716. When the concentration of airborne contaminants reach the exposure standards then the use of a half-face respirator with acid vapour cartridge is recommended. For high concentration use a atmosphere-supplied, positive pressure demand self-contained or airline breathing apparatus supplied air respirator complying with the requirements of AS/NZS 1715 is recommended. Filter capacity and respirator type depends on exposure levels.

If entering spaces where the airborne concentration of a contaminant is unknown then the use of a Self-contained breathing apparatus (SCBA) with positive pressure air supply complying with AS/NZS 1715 / 1716, or any other acceptable International Standard is recommended. The use of fully-encapsulating, gas-tight suits is also recommended.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear liquid with pungent odour.
Boiling Point:	~ 96 °C @ 760 mm Hg
Vapour Pressure:	None Available.
Specific Gravity:	1.1
Flash Point:	64 - 85 °C
Lower Explosive Limits:	7%
Upper Explosive Limits:	73%
Solubility in Water:	Miscible
pH:	2.8-4.0

10. STABILITY AND REACTIVITY

STABILITY:

On standing, especially in cold may become cloudy and on exposure to very low temperatures a precipitate of trioxymethylene is formed. In the air it is slowly oxidizes to formic acid.

When evaporated, some formaldehyde escapes, but most of it is changed to trioxymethylene.

HAZARDOUS DECOMPOSITION PRODUCTS:

Emits choking and corrosive fumes when heated to decomposition.

HAZARDOUS POLYMERIZATION:

Will not occur.

INCOMPATIBILITIES:

Powerful reducing agent. Reacts with oxidising agents, acids, alkalis, and metal salts.

CONDITIONS TO AVOID:

Heat, flames, ignition sources and incompatibles.

11. TOXICOLOGICAL INFORMATION

NON-LETHAL IRREVERSIBLE EFFECTS AFTER A SINGLE EXPOSURE

This substance is capable of causing serious irreversible effects after a single exposure and is determined to be a hazardous substance.

Such irreversible effects can include central nervous system effects, kidney necrosis liver lesions, anaemia or paralysis.

RISK PHRASES

R23/24/25 Toxic by inhalation, in contact with skin and if swallowed.

R34 Causes burns.

R40 Possible risk of irreversible effects

R41 Risk of serious damage to eyes

R43 May cause sensitisation by skin contact.

R40(3) Possible risks of irreversible effects

SAFETY PHRASES

S1/2 Keep locked up and out of reach of children.

S7 Keep container tightly closed.

S16 Keep away from sources of ignition - No smoking.

S23 Do not breathe vapour/spray.

S24/S25 Avoid contact with skin and eyes.

S26 In case of contact with eyes, rinse immediately with plenty of water and contact a doctor or Poisons Information Centre.

S36/37/39 Wear suitable protective clothing, gloves and eye/face shields.

S45 In case of accident or if you feel unwell, contact a doctor or Poisons Information Centre immediately and show this container or label.

S51 Use only in well ventilated areas.

12. ECOLOGICAL INFORMATION

Formaldehyde:

Formaldehyde has a relatively low toxicity for fish, 96 h LC50 values being higher than 10 mg/L in all cases, e.g. Rainbow Trout 96 h LC50: 123 mg/L

Algae and some invertebrates seem to be more susceptible to formaldehyde, however responses differ widely:

Bacteria (E.Coli): 1mg/L

Algae (Scenedesmus): 0.3-0.5 mg/L

Inhibits anaerobic sludge digestion at 100 mg/L

aerobic degradation at 135-175 mg/L

[Handbook of Environmental Data on Organic Chemicals 2nd ed K Veschuere Van Nostrand Reinhold Co, 1983]

Methanol:

Environmental fate: THOD 1.5 mg/L O₂

Aquatic Toxicity:

Trout LC50 (48 hrs): 8000 mg/L

13. DISPOSAL CONSIDERATIONS

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to an approved waste facility.

Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

14. TRANSPORT INFORMATION

UN Number: 2209

Proper Shipping Name: FORMALDEHYDE SOLUTION

Dangerous Goods Class: 8

Subsidiary risk: None allocated

Packing Group: III

Hazchem Code: 2Z

Classified as a CLASS 8 (CORROSIVE) Dangerous Good according to the Australian Code for the Transport of Dangerous Goods by Road and Rail, 6th Edition.

Dangerous goods of Class 8 (Corrosive) are incompatible in a placard load with any of the following:

- Class 1

- Class 4.3
- Class 5
- Class 6, if the Class 6 dangerous goods are cyanides and the Class 8 dangerous goods are acids
- Class 7

and are incompatible with food and food packaging in any quantity.

Emergency information(Transport):

Dangerous Goods - Initial Emergency Response Guide (SAA/SNZ HB76:1997)

For TOXIC AND/OR CORROSIVE Guide No: 37

15. REGULATORY INFORMATION

Poison Schedule: S6

16. OTHER INFORMATION

Contact Point

Technical Department
03 9497 2822

After Hours
mobile: 0418-530-461

Disclaimer

The information herein is to the best of our knowledge, correct and complete. It describes the safety requirements for this product and should not be construed as guaranteeing specific properties. Since methods and conditions are beyond our control we do not accept liability for any damages resulting from the use of, or reliance on, this information in inappropriate contexts.

VL 09/00