



TAG SOLVENT PRODUCTS (PTY)LTD.

MATERIAL SAFETY DATA SHEET CLEAR METHS

1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Common name	: CLEAR METHS		
Supplier	: TAG Solvent Products Mallet Road/Weg Knights Germiston 1401 Republic of South Africa TEL: +27 11 822-1600		
Synonym	:		
Trade name	: Clear Meths		
Material uses	:		

2 COMPOSITION / INFORMATION ON INGREDIENTS

Name	CAS#	% By Weight	Exposure Limits
1. Ethanol	64-17-5	92 (min)	TWA: 1000 ppm OSHA TWA: 1900 mg/m ³
2. Isopropyl alcohol	67-63-0	6-8	TWA: 400 STEL: 500 (ppm) from OSHA [1992] TWA: 400 STEL: 500 (ppm) from ACGIH TWA: 400 STEL: 500 (ppm) from OSHA [1976] TWA: 400 STEL: 500 (ppm) [1975]
3. MEK	79-93-3	0.3 (max)	TWA: 200 STEL: 300 (ppm) FROM OSHA [1994] TWA: 200 STEL: 300 CEIL: 300 (ppm) from ACGIH [1996] TWA: 590 STEL: 885 CEIL: 885 (mg/m ³) from MSHA [1971] TWA: 150 STEL: 190 (ppm) from OEL [1993] SKIN
4. Benzene	71-43-2	0.1 (max)	TWA: 1 STEL: 5 (ppm) FRM OSHA TWA: 10 (PPM) from ACGIH [1997] TWA: 0.1 STEL: 1 (ppm) from NIOSH
5. Cyclohexane	110-82-7	0.1 (max)	TWA: 300 CEIL 375 (ppm) TWA: 1050 CEIL: 1300 (mg/m ³)

3 HAZARDS IDENTIFICATION

Physical state and appearance	: Liquid.
Emergency overview	: WARNING! FLAMMABLE LIQUID AND VAPOUR. MAY CAUSE EYE IRRITATION. CAUSES SKIN IRRITATION. CONTAINS MATERIAL, WHICH CAN CAUSE CANCER. Risk of cancer depends on duration and level of exposure.
Routes of entry	: Eye contact. Ingestion. Inhalation. Absorbed through skin.
Potential acute health effects	
Eyes	: Hazardous in case of eye contact (irritant).
Skin	: Sensitization of the product: Not available. Very hazardous in case of skin contact. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
Inhalation	: Slightly hazardous in case of inhalation (lung irritant).
Ingestion	: Hazardous in case of ingestion
Potential chronic health effects	: CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human) by ACGIH, + (Proven) by OSHA, A (Proven) by EPA, + (Proven) by [NIOSH]. Classified A4 (not classified for human or animal) by AVGIH [Ethanol]. MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. [MEK]. Classified PROVEN for human [Benzine]. Mutagenic for mammals [Benzine]. Mutagenic for bacteria/or yeast [Benzine]. TERATOGENIC EFFECTS: Classified PROVEN for human [Ethanol].
Medical conditions aggravated by overexposure	: DIABETICS treated with PHENFORMIN and individuals with chronic liver disease, heart disease or neurological disease might be more sensitive to the effects of ETHANOL. Persons receiving ANTABUSE therapy for EHTANOL dependency might develop ANTABUSE REACTION from occupational exposure.
Overexposure/signs/Symptoms	: Vapors may cause dizziness or suffocation. Impaired sensory function, muscular incoordination, fatigue, mild euphoria, loud profuse speech, impaired mental activity, nausea, vomiting, ataxia, hypothermia, amnesia, anesthesia, heavy breathing, deep coma, death.

See toxicological information (section 11)

4 FIRST AID MEASURES

Eye contact	: Check for and remove any contact lenses. Immediately flush the eyes with running water for at least 15 minutes, keep eyelids open. Cold water may be used. DO NOT use eye ointment. Get medical attention.
Skin contact	: In the case of contact, flush the skin with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, Cervices, creases and groin. Cover the irritated skin with an emollient. Wash clothes before reuse. Thoroughly clean shoes before reuse. If irritation persists seek medical attention.
Hazardous skin contact	: Wash with a disinfectant soap and cover skin with an anti-bacterial cream. Seek medical attention.
Inhalation	: If inhaled, remove to fresh air and allow victim to rest. Get medical attention.
Hazardous inhalation	: If inhaled, remove victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is laboured, give oxygen If not breathing apply artificial respiration. Get medical attention. WARNING! It may be hazardous to the person performing aid to give CPR when inhaled material is toxic, infectious or coorisive. Seek medical attention..
Ingestion	: DO NOT induce vomiting unless directed to do so by medical personnel. Examine the lips and mouth to ascertain whether the tissues are damaged, a possible indication that the toxic material was ingested; the absence of such signs, however, is not conclusive. Loosen tight clothing such as a collar, tie, belt or waistband. If not breathing apply artificial respiration. Get medical attention.
Hazardous ingestion	: No additional information
Notes to physician	: Support respiratory and cardiovascular function.

5	<i>FIRE FIGHTING MEASURES</i>
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Flammability of the product	: Flammable
Autoignition temperature	: The lowest known value is 363°C (685.4°F) [ethanol]
Flash points	: CLOSED CUP: 12.°C (53.6°F).
Flammable limits	: The greatest known range is LOWER: 3.3% UPPER: 19% [ethanol]
Products of combustion	: These products are carbon oxides (CO, CO ₂)
Fire hazards in presence of various substances	: Highly flammable in the presence of acids, and of alkalis. Flammable in the presence of open flames and sparks, of heat and oxidizing materials, and of combustible materials. Slightly flammable in the presence of shocks, and of reducing materials. Non-flammable in presence of moisture.
Explosion hazards in presence of various substances	: Risk of explosion of the product in presence of mechanical impact: Not available. Risks of explosion of product on presence of static discharge: Not available. Slightly explosive in presence of oxidizing materials.
Fire fighting media and instructions	: Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder, CO ₂ , alcohol foam or water spray. . LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet on order to prevent pressure build-up, autoignition or explosion.
Protective clothing (fire)	: Wear MSHA/NIOSH self-contained respirator or equivalent and full protective gear.
Special remarks on fire hazards	: Containers should be grounded.

Special remarks on explosive hazards	: No additional remarks.
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6 ACCIDENTAL RELEASE MEASURES

Small spill or leak	: Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.
Large spill or leak	: Flammable liquid, insoluble in water. Keep away from heat. Keep away from sources of Ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. DO NOT get water inside the container. DO NOT touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all sources of ignition. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

7 HANDLING AND STORAGE

Handling	: Keep locked up. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. DO NOT ingest. DO NOT breath gas, fumes, vapour or spray. If ingested, seek medical advice immediately and show label or container. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.
Storage	: Flammable materials should be stored in a separately safety storage cabinet or room. Keep away from heat. Keep away from sources of ignition. Keep container tightly closed. Keep in a cool, well-ventilated place. Ground all equipment containing material. A refrigerated room would be preferable for materials with a flash point lower than 37.8°C (100°F).

8 EXPOSURE CONTROLS, PERSONAL PROTECTION

Engineering controls	: Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapour below their respective threshold limit values. Ensure that eyewash stations and safety showers are proximal to the work-station location.										
Personal protection	<table> <tr> <td>Eyes</td> <td>: Splash goggles.</td> </tr> <tr> <td>Body</td> <td>: Lab coat.</td> </tr> <tr> <td>Respiratory</td> <td>: Vapour respirator. Be sure to use an MSHA/NIOSH approved respirator equivalent. Wear appropriate respirator when ventilation is inadequate. : Butyl rubber gloves.</td> </tr> <tr> <td>Hands</td> <td>: Not applicable.</td> </tr> <tr> <td>Feet</td> <td></td> </tr> </table>	Eyes	: Splash goggles.	Body	: Lab coat.	Respiratory	: Vapour respirator. Be sure to use an MSHA/NIOSH approved respirator equivalent. Wear appropriate respirator when ventilation is inadequate. : Butyl rubber gloves.	Hands	: Not applicable.	Feet	
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Hands	: Not applicable.										
Feet											
Protective clothing	: Splash goggles. Lab coat. Vapor respirator. Butyl gloves.										
Personal protection in case of large spills	: Splash goggles. Full suit. Vapor and dust respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling the product.										

Product	
1.	Ethanol TWA: 1000 ppm OSHA TWA: 1900 mg/m ³
2.	Isopropyl alcohol TWA: 400 STEL: 500 (ppm) from OSHA [1992] TWA: 400 STEL: 500 (ppm) from ACGIH TWA: 400 STEL: 500 (ppm) from OSHA [1976] TWA: 400 STEL: 500 (ppm) [1975]
3.	MEK TWA: 200 STEL: 300 (ppm) FROM OSHA [1994] TWA: 200 STEL: 300 CEIL: 300 (ppm) from ACGIH [1996] TWA: 590 STEL: 885 CEIL: 885 (mg/m ³) from MSHA [1971]
4.	Benzene TWA: 150 STEL: 190(ppm) from OEL [1993] SKIN TWA: 1 STEL: 5 (ppm) FRM OSHA TWA: 10 (PPM) from ACGIH [1997]
5.	Cyclohexane TWA: 0.1 STEL: 1 (ppm) from NIOSH TWA: 300 CEIL 375 (ppm) TWA: 1050 CEIL: 1300 (mg/m ³)

Physical state and appearance	: Liquid.
Colour	: Colourless. Clear.
Odor	: Not available.
Taste	: Not available.
Molecular weight	: Not applicable
Molecular formula	: Not applicable.
PH (1% soln/water)	: 7 [Neutral.]
Boiling/condensation point	: 79°C (174.2°F)
Melting/freezing point	: May start to solidify at -88.5°C (-127.3°F) based on data for: Isopropyl alcohol. Weighted average: -112.31°C (-170.2°F)
Critical temperature	: The lowest known value is 232.5 °C (450.5°F) (isopropyl alcohol)
Specific gravity	: 0.791 (water=1)
Vapor pressure	: The highest known value is 43mm of Hg (@20°C) [Ethanol 99.9/UN]. Weighted average: 42.3mm of Hg (@20°C).
Vapor density	: The highest known value is 2.08 (Air=1) [Isopropyl alcohol]. Weighted average: 1.63 (Air=1)
Volatility	: 100% vlv. [MEK]. Weighted average: 127% (v/v) 100% (w/w). [MEK]. Weighted average: 100%
Odor threshold	: The highest known value is 200ppm [Isopropyl alcohol]. Weighted average: 181.4ppm.
Evaporation rate	: 1.176 (Butyl acetate = 1)
VOC	: 100 (%)
Viscosity	: The highest known value is 2.4cP [Isopropyl alcohol]. Weighted average: 1.48 cP.
LogK_{ow}	: The product is not soluble in water.
Iconicity (in water)	: No data available.
Dispersion properties	: See solubility in water, methanol, diethyl ether, n-octanol, and acetone.
Solubility	: Easily soluble in cold water, hot water, methanol, and diethyl ether. Soluble in acetone. Partially soluble in n-octanol.
Physical chemical comments	: No additional remark.

10 STABILITY AND REACTIVITY

Stability and reactivity	: The product is stable.
Conditions of instability	: No additional remarks.
Incompatibility with various substances	: Highly reactive with reducing agents, alkalis. Reactive with oxidizing agents, metals, acids. Slightly reactive with moisture.
Hazardous decomposition products	: Not available.
Hazardous polymerization	: Not available.

11 TOXICOLOGICAL INFORMATION

Toxicity to animals	: WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute oral toxicity (LD50): 3600mg/kg [Mouse]. (Isopropyl alcohol). Acute dermal toxicity (LC50): 12800mg/kg [Rabbit]. (Isopropyl alcohol). Acute toxicity of the vapour (LC50): 8307 ppm 4 hour(s) [Rat]. (Calculated value for the mixture)
Chronic effects on humans	: CARCINOGENIC EFFECTS: A4 (Not classifiable for human or animal) by ACGIH [Ethanol]. Classified A1 (confirmed for human) by ACGIH, 1 (Proven for human). By IARC, 1 (Known) by NTP, + (Proven) by OSHA, A (Proven) by EPA, + (Proven) by NIOSH, A1 (Confirmed for human) by MAK [Benzene]. NUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast [MEK.]. Classified PROVEN fro human [Benzene]. Mutagenic for mammals. [Benzene]. Mutagenic for bacteria and/or yeast [Benzene]. DEVELOPMENTAL TOXICITY: PROVEN [Ethanol]. The substance is toxic to kidneys, lungs, the nervous system, liver, immune system, skin, eyes, brain, blood, heart, spleen and gastro-intestinal tract
Other toxic effects on humans	: Very hazardous in case of skin contact (irritant). Hazardous in case of skin contact (sensitizer, permeator), of eye contact (irritant), of ingestion. Slightly hazardous in case of inhalation.
Special remarks on toxicity to animals	: Based on the reported and estimated BCF, benzene will not be expected to bioconcentrate in aquatic organisms. (Benzene).
Special remarks on chronic effects on humans	: 0900 Detected in maternal milk in human.
Special remarks on other toxic effects on humans	: Moderately toxic and narcotic in high concentrations. Experimentally tumorigen [ethanol].

12 ECOLOGICAL INFORMATION


Ecotoxicity	: Not available.
BOD5 and COD	: The COD is 52 mg/kg [Hour. Day(s)]
Biodegradable/OECD	: Not available.
Mobility	: No data available. Possible hazardous short-term degradation products are not likely. However, long term degradation products may arise.
Products of degradation	: Formaldehyde and Acetic acid.
Toxicity of the products of biodegradation	: The products of degradation are less toxic than the product itself.
Special remarks on the products of biodegradation	: Formaldehyde and Acetic acid are products of biodegradation. BIOCONCENTRATION: There is no indication of bioconcentration in fish as a result of Ethanol's low log P value (log P = -0.31 [Ethanol]).

13 DISPOSAL CONSIDERATIONS

Waste information	: Waste must be disposed of in accordance with federal, state, Provincial and local environmental control regulations. The recommended disposal method for this product is: Incineration.
Waste stream	: Not available.

Consult your local or regional authorities.

14 TRANSPORT INFORMATION

Regulatory information	UN number	Proper shipping name	Class	Packing group	Label	Additional information
DOT Classification	UN 1170	ETHONAL (ETHYL ALCOHOL)	DOT CLASS 3: Flammable liquid.	II		
TDG Classification			TDG CLASS 3: Flammable liquid.			
IMO/IMDG Classification			IMDG CLASS 3: Flammable liquid.			
ICAO/IATA Classification			IATA CLASS 3: Flammable liquid.			
ADR/RID Classification			ADR CLASS: Flammable liquid A. Flammable liquid with a flash point lower than 21°C (70°F).			

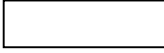

Marine Pollutant	: Not available
Hazardous Substances Reportable Quantity	: Not available.
Special provisions for Transport	: No additional remark.

15 REGULATORY INFORMATION

HCS Classification	: HCS Class: CONTAINS MATERIAL WHICH CAN CAUSE CINACER. HCS Class: Flammable liquid having flash point lower than 37.8°C (100°F). HCS Class: Irritating substance. HCS Class: Repreoductive toxins. HCS Class: Target organ effects.
U.S. Federal regulations	: TSCA inventory: MEK; Benzene; Cyclohexane; Ethanol; TSCA 8_d) H and S data reporting: Benzene. Clean water act (CWA) 307: No products were found. Clean water act (CWA) 311: No products were found. Clean water act (CAA) 112 accidental release prevention: No products were found. Clean water act (CAA) 112 regulated flammable substances: No products were found. Clean water act (CAA) 112 regulated toxic substances: No products were found.

International Regulations	
WHMIS (Canada)	: WHMIS CLASS B-2: Flammable liquid with a flash point lower than 37.8°C WHMIS CLASS D-2A: Material causing other toxic effects (VERY TOXIC). WHMIS CLASS D-2B: Material causing other toxic effects (TOXIC). <u>CEPS DSL:</u> Product(s): MEK; Benzene; Cyclohexane; Ethanol; Isopropyl alcohol.
EINECS	: Not available
DSCL (EEC)	: R38 – Irritating to skin. R39 – Danger of very serious irreversible effects. R43 – May cause sensitization by skin contact. R45 – May cause cancer.
International Lists	: <u>Australia</u> Products: Benzene. <u>Japan (MITI)</u> Products: Benzene.
State regulations	: Pennsylvania RTK: MEK; Benzene; Cyclohexane; Ethanol. Florida: MEK; Benzene; Cyclohexane; Ethanol. Massachusetts: MEK; Benzene; Cyclohexane; Ethanol. New Jersey: MEK; Benzene; Cyclohexane; Ethanol. California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Benzene

16 OTHER INFORMATION

Label requirements	: HIGHLY FLAMMABLE LIQUID AND VAPOUR, VAPOUR MAY CAUSE FLASH FIRE. CONTAINS MATERIAL, WHICH CAN CAUSE CANCER. BIRTH DEFECT HAZARD. CONTAINS MATERIAL, WHICH CAN CUSE BIRTH DEFECT. CONTAINS MATERIAL, WHICH MAY CASUE VLOOD, KIDNEY, LLUNGS, NERBOUS SYSTEM, REPRODUCTIVE SYSTEM, LIVER, HEART, SPLEEN, BRAIN, GASTRO-INTESTINAL TRACT, IMMUNE SYSTEM, SKIN, EYES DAMAGE. MAY CAUSE EYE IRRITATION. CAUSES SEVERE SKIN IRRITATION.	
Hazardous material Information System (U.S.A.)		
References	<ul style="list-style-type: none"> - Manufacturer's Material Safety Data Sheet. - The Sigma-Aldrich Library of Chemical Safety Data, Ed II. - BDH; Hazard Data disk, Version 3. - RTECHS: National Institute for Occupational Safety and Health; Issue:97-3 (August, 1997). - CESARS: Chemical Evaluation and Retrieval System, Produced by: Ontario Ministry of Environment and Michigan department of Natural Resources. Issue: 97-3 (August 1997). - CHRIS: Chemical Hazardous Response Information System; United States Coast Guard, Issue: 97-3 (August 1997). - CHEMINFO: Canadian Centre for Occupation Health and Safety, Issue: 97-3 (August, 1997). - Hazardous Substances Data Bank (HSDB), Issue: 97-3 (August 1997). 	

Other special considerations	: No additional remarks.
Date of Printing	: 5 March 2004
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Notice to reader:

This MSDS summarizes at the date of issue our best knowledge of the health, safety and environmental hazard information related to the product, and in particular how to safely handle, use and transport the product in the workplace. Since TAG Solvent Products (PTY) LTD. and its subsidiaries cannot anticipate or control the conditions under which the product may be handled, used, stored or transported, each user must, prior to usage, review MSDS in the context of how the user intends to handle, use, store or transport the product in the workplace and beyond, and communicate such information to all relevant parties. If clarification or further information is required to ensure that an appropriate assessment can be made, the user should contact the company.

We shall not assume any liability for the accuracy or completeness of the information contained herein or any advice given unless there has been gross negligence on our part. In such event our liability shall be limited only to direct damages suffered. Our responsibility for the product as sold is subject to our standard terms and conditions, a copy of which is sent to our customers and is also available upon request. All risk with possession and application of the product passes on delivery.