



TAG SOLVENT PRODUCTS (PTY)LTD.

MATERIAL SAFETY DATA SHEET ***TAGSOL MP***

1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Common name	: Tagsol MP
Supplier	: TAG Solvent Products Mallet Road/Weg Knights Germiston 1401 Republic of South Africa TEL: +27 11 822-1600
Synonyms	: Propylene glycol methyl ether (PGME) Methoxypropanol.
Trade name	: Tagsol MP

2 COMPOSITION / INFORMATION ON INGREDIENTS

Hazardous components	: 1-Methoxy-2-propanol 95%, 2-Methoxy-1-propanol 5%
EEC Classification	: Not available
R-Phrases	: Flammable, Irritating to eyes
Safety Phrases	: Avoid contact with skin. In case of contact with eyes, rinse with plenty of water and seek medical help

3 HAZARDS IDENTIFICATION

Physical state and Appearance	: Liquid.
Emergency overview	: DANGER! FLAMMABLE LIQUID AND VAPOUR. VAPOUR MAY CAUSE FLASH FIRE. CAUSE EYE IRRITATION. MAY BE HARMFUL IF INHALED OR SWALLOWED. MAY CAUSE SKIN IRRITATION Keep away from heat, sparks and flame. Avoid contact with eyes, skin and clothing. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Avoid contact with spilled material and runoff with soil and surface waterways
Routes of entry	: Eye contact. Ingestion. Inhalation. Absorbed through skin.
Potential acute health effects	
Eyes	: Very hazardous in case of eye contact (irritant). Inflammation of
Skin	the eye is characterized by redness, watering and itching. : Not hazardous in case of skin contact.
Inhalation	: Hazardous in case of inhalation
Ingestion	: Hazardous in case of ingestion
Potential chronic (long-term exposure) health effects	: CARCINOGENIC EFFECTS: No human or animal information is available. MUTAGENIC EFFECTS: No human or animal information is available. Tagsol MP gave negative results in a bacterial test and in cultured mammalian cells TERATOGENIC EFFECTS: No human or animal information is available TERATOGENICITY & EMBRYOTOXICITY: No human information is available. No significant reproductive effects have been observed in animal tests. REPRODUCTIVE TOXICITY: No human information is available. There were no testicular effects in a study with male rats or rabbits. POTENTIAL FOR ACCUMULATION: Tagsol MP may enter the body by all routes of exposure. In animal experiments, Tagsol MP has been detected in the blood, skin and liver. It is unlikely to accumulate in the body. It is eliminated mainly by expired air, with smaller amounts in the urine and very small amounts in the feces.

Effects of short-term (acute) exposure	
Inhalation	: Vapour concentrations of Tagsol MP above the TLV (100ppm) are irritating to the eyes, nose and throat. At very high concentrations (above 1000 ppm), depression of the nervous system can occur marked by headache, nausea, light-headedness, drowsiness, incoordination or possible unconsciousness. These concentrations are intolerable due to severe eye, nose and throat irritation.
Skin contact	: Tagsol MP is not irritating to skin but is readily absorbed. However, toxic amounts can only be absorbed through extensive prolonged contact. Human studies with the chemically related Dipropylene glycol monomethyl ether, showed no evidence of skin sensitization.
Eye contact	: Tagsol MP vapours at, and above, approximately 100ppm cause eye irritation. Excess watering of the eyes occurs at 250ppm. There are no reported cases of eye injury from contact with liquid Tagsol MP. Based on research, Tagsol MP may be a moderate to severe eye irritant.
Ingestion	: Due to low oral toxicity, it is unlikely that toxic amounts of Tagsol MP could be ingested with normal handling and use. No cases of ingestion have been reported. Effects of Tagsol MP could include headaches, nausea, vomiting, diarrhea, light headedness, drowsiness, incoordination or possible unconsciousness, indicating depression of the nervous system

4 FIRST AID MEASURES

Never give fluids or induce vomiting if patient is unconscious or is having convulsions.

Eye contact	: Check for and remove any contact lenses. Immediately flush the eyes with running water for at least 20 minutes, or until the chemical is removed while holding the eyelid open, Take care not to rinse contaminated water into the unaffected eye. Obtain medical advice immediately.
Skin contact	: In the case of contact, wash off with flowing water or shower for at the least 5 minutes or until the chemical is removed. If irritation persists, obtain medical advice immediately. Completely decontaminate clothing, shoes and leather goods before reuse or discard.
Inhalation	: If inhaled, remove to fresh air. If not breathing apply artificial respiration, or if the heart has stopped, cardiopulmonary resuscitation (CPR). If breathing is laboured, give oxygen. Get medical attention.
Ingestion	: Never give anything by the mouth if the victim is rapidly losing consciousness, is unconscious or convulsing. DO NOT induce vomiting unless directed to do so by medical personnel. Have the victim drink 240-300ml of water. If vomiting occurs naturally, rinse mouth and repeat administered water. Get medical attention.
Notes to physician	: Consult a doctor and/or the nearest Poison Control Centre for all exposure except minor instances of inhalation or skin contact. All first aid procedures should be periodically reviewed by doctor familiar with the material and its conditions of use in the workplace

5 FIRE FIGHTING MEASURES	
Flammability of the product	: Flammable
Autoignition temperature	: 286°C
Flash points	: CLOSED CUP: 35°C
Flammable limits	: LOWER: 1.7% UPPER: 11.5% (20°C)
Fire hazards in presence of various substances	: Extremely flammable in the presence of open flames and sparks, of heat.
Explosion hazards in presence of various substances	: Risks of explosion of the product – Sensitivity to mechanical impact: Probably not sensitive, stable material. No information on electrical conductivity is available. However, vapours in the flammable range may be ignited by a static discharge of sufficient energy: No information is available on electrical conductivity. It is probably not sensitive, since the flash point is above room temperature
Combustion and thermal decomposition products	: Carbon monoxide, carbon dioxide.
Fire fighting media and instructions	: Carbon dioxide, dry chemical powder, alcohol foam, and polymer foam. Water may be ineffective because it may not cool Tagsol MP below its flash point.
Extinguishing media to avoid	: Do not use direct water stream, it may be ineffective and spread the fire.
Special remarks on fire and explosive hazards	: Flammable liquid. Can release vapours that form explosive mixtures at, or above, 32°C. Vapour is heavier than air and may travel a considerable distance to a source of ignition and flashback to a leak or open container. May form peroxides during prolonged storage in contact with air. The rate and extent of peroxide formation is unknown, but is probably low.
Protective clothing (fire)	: Wear positive-pressure self-contained breathing apparatus and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves). If protective equipment is not available or not used, fight fire from a protected location or a safe distance.

6	ACCIDENTAL RELEASE MEASURES
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Personal precautions	: Restrict access to area until completion of the cleanup. Ensure only trained personnel conduct cleanup. Wear adequate personal protective clothing and equipment to prevent excessive skin and eye contact, and inhalation.
Environmental precautions	: Contain liquid to prevent contamination of soil, surface water or ground water (keep material out of sewers, storm drains). May be toxic to aquatic life
Small spill or leak	: Eliminate all sources of ignition, ventilate the area and wear a laboratory coat, or acid-proof overalls, gloves, approved self-contained breathing apparatus and safety boots. Small quantities may be absorbed on paper and evaporated in a fume cupboard (do not pour into drains as explosive concentrations may develop). Soak up spill with absorbent material, which does not react with spilled chemical. Put material in suitable covered, labeled containers. Flush the area with water. Contaminated absorbent material may pose the same hazards as spilled product.
Large spill or leak	: Contact Fire and Emergency Services and supplier for advice. Do not touch spilled material. Prevent material from entering sewers or confined areas. Stop or reduce leak if safe to do so. Contain spill with earth, sand, or absorbent material, which does not react with spilled material. Remove liquid with flame-proof pumps or vacuum equipment. Place in suitable, labeled containers for removal and disposal at a controlled site. Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate state and regulatory agencies to ascertain proper disposal procedures. Ideally, Tagsol MP should be disposed of in a chemical incinerator with appropriate precautions. Flush spilled area with large volume of water and allow to drain to a waste treatment system.

7 HANDLING AND STORAGE

Handling : This material is FLAMMABLE and TOXIC. Before handling, it is important that engineering controls are operating and that protective equipment requirements are being followed. People working with this chemical should be properly trained regarding its hazards and its safe use.

Eliminate all ignition sources (e.g. sparks, open flames, hot surfaces). Keep away from heat. Post NO SMOKING signs. Ground all drums, transfer vessels, hoses and piping. Ground clips must contact bare metal. Never perform any welding, cutting, soldering, drilling or other hot work on an empty vessel, container or piping until all liquid and vapours have been cleared. It is a good practice to keep all areas where this material is handled clear of other materials, which may burn. Use non-sparking ventilation systems, approved explosion-proof equipment and intrinsically safe electrical systems in areas of use. Keep aisles and exits free of obstruction. For large scale operations consider the installation of leak and fire detection equipment along with suitable, automatic fire suppression system. Avoid generating vapours and mists. Prevent the release of vapours or mists into the workplace air. Wear appropriate personal protective equipment, if necessary, to avoid contact with this chemical and any contained equipment. Use in the smallest possible amounts, in a well-ventilated area, separate from the storage area. Do not use with incompatible materials such as strong oxidizing agents (e.g. peroxide, nitrates and perchlorates). To avoid splashing, carefully transfer into sturdy containers made of compatible materials. Never transfer liquids by pressurizing the original shipping containers with air or inert gas. Do not dispense in storage area unless dispensing area is segregated by fire-resistant construction. Only use portable containers and dispensing equipment for flammable liquids. Label containers. Keep containers closed when not in use. Avoid damaging containers. Empty containers may contain hazardous residues. Have suitable emergency equipment for fires, spills and leaks readily available. Practice good housekeeping. Maintain handling equipment. Comply with applicable regulations

Storage : Store in cool, dry, well-ventilated area, out of direct sunlight and away from heat and ignition sources. Keep storage areas clear of combustible materials. Lighted cigarettes, matches or any other ignition sources should not be allowed around indoor or outdoor storage areas.

Storage area should be clearly identified, clear of obstruction and accessible only to trained and authorized personnel. Keep storage area separate from work areas. Post warning signs, Inspect periodically for damage or leaks. Have appropriate fire extinguishers and spill clean-up equipment in or near storage area. Store combustible materials according to occupational health and safety regulations and fire and building codes. A Storage facility should be made of fire-resistant materials. Construct walls, floors, shelving and fittings in storage areas from non-combustible materials that are compatible with Tagsol MP. Store away from oxidizers and corrosives and other incompatible materials such as nitric acid, sulfuric acid, sulfur dichloride, which increase the risk of fire and explosion. Store flammable materials according to occupational health and safety regulations and fire and building codes, which will describe the kind of storage area and type of storage containers. Use grounded, non-sparking ventilation system, approved explosive-proof equipment and intrinsically safe electrical systems. It is good practice to seal floors to prevent absorption. Consider leak detection and alarm equipment for storage area. Provide raised sills or ramps at doorways or create a trench, which drains to a safe location. Keep storage area separate from work areas. Store away from work process and production areas, elevators, building and room exits or main aisles leading to exits. Post warning signs. Post warning signs, Inspect periodically for damage or leaks. Have appropriate fire extinguishers and spill clean-up equipment in or near storage area. Inspect all incoming containers to make sure they are properly labeled and not damaged. Keep containers tightly closed. Keep quantity stored as small as possible. Bond and ground metal containers in storage area. Contain spills or leaks by storing containers in trays made from combustible materials, over an area sealed on the bottom and dike to hold entire contents

Occupational exposure storage	: MAK – Not available : ACGIH – TWA 100ppm (369mg/m ³), short-term (10 min TWA value) 150ppm (553mg/m ³)
Engineering controls	: Engineering methods to control hazardous conditions are preferred. Methods include mechanical ventilation (dilution and local exhaust), process or personnel; enclosure, control of process conditions, and process modification (e.g. substitution of a less hazardous material). Administrative controls and personal protective equipment may also be required. Use no-sparking, grounded ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside. Use local ventilation, and process enclosure if necessary, to control airborne mist and vapour. Supply sufficient replacement air to make up for air removed by exhaust systems.
Personal protective equipment	
Eyes/face protection	: Splash goggles/safety glasses.
Body/Skin	: For brief contact, no precautions other than clean body covering should be needed (overalls).
Respiratory	: Vapour respirator. No specific guidelines available. NIOSH recommends for 2-ethoxyethanol may be applicable: NIOSH RECOMMENDATIONS FOR 2-ETHOXYETHANOL CONCENTRATIONS IN AIR: Up to 5ppm: Supplied-air respirator (SAR) Up to 12.5ppm: SAR operated in a continuous-flow mode Up to 25ppm: Full-facepiece self-contained breathing apparatus (SCBA); or full-facepiece SAR Up to 500ppm: Positive pressure SAR
Hands	: Rubber gloves, when prolonged or frequent repeated contact could occur.
Feet	: Chemical resistant safety boots.
Protective clothing	: Splash goggles. Full chemical resistant protective suit. Vapor respirator. Butyl gloves. Chemical resistant boots.
Exposure control/personal protection comments	: Remove contaminated clothing. Keep contaminated clothing enclosed containers. Discard or launder before re-wearing. Do not eat, drink, or smoke in work areas. Wash hands after handling this material
Emergency or planned entry into unknown concentrations or IDLH conditions	: Positive pressure, full facepiece SCBA; or positive pressure, full-facepiece SAR with an auxiliary positive pressure SCBA. Substance is reported to cause eye irritation or damage; eye protection must be worn. NOTE: The immediately dangerous to life or health (IDLH) concentration for 2-ethoxyethanol is 500ppm

9	PHYSICAL AND CHEMICAL PROPERTIES
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Physical state and appearance	: Clear liquid.
Colour	: Colourless. Clear.
Odor	: Ether-like (sweet).
pH (1% soln/water)	: Not applicable.
Boiling/condensation point	: 120°C
Melting/freezing point	: -96°C
Explosive properties	: 1.6-13.8%v/v
Density	: 0.920g/cm ³ at 20°C
Vapor pressure	: 11.8 mm HG (@25 °C)
Solubility	: Completely soluble in water. Soluble in ethyl alcohol, ether and a variety of other organic solvents
Flash point	: 35°C (open cup)
Autoignition	: 286°C
Flammability – LFL	: 1.3 %vol/vol (100°C)
Flammability – UFL	: 12.0 %vol/vol (150°C)
Oxidizing properties	: None

10	STABILITY AND REACTIVITY
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Chemical stability	: Normally stable
Conditions of instability	: Avoid static discharges. Flammable vapours can be released at elevated temperatures.
Material to avoid	: Reactive with oxidizing agents (increase risk of fire or explosion) : Reactive with strong acids (may cause decomposition of ethers).
Hazardous decomposition products	: None reported
Hazardous polymerization	: Will not occur.
Corrosivity to metals	: Not corrosive
Stability and reactivity comments	: Some glycol ethers form explosive peroxides during prolonged storage in contact with air. Formation of peroxides will occur more readily in sunlight. The rate and extent of peroxide formation with Tagsol MP is not known.

11 TOXICOLOGICAL INFORMATION

Toxicity	<p>LC50 (rat): 15000ppm; 4hrs LC50 (guinea pig): 15000ppm; 10hrs LC50 (oral rat): 6.6g/kg (5.2-7.5g/kg) LC50(oral, mouse): 10.7-10.8 LC50 (oral, dog): 4.6+5.5g/kg (2); approximately 9.2g/kg LC50 (oral, Rabbit): 5.2-5.3g/kg LC50 (dermal, rabbit): 13-14g/kg In these short-term studies, death was due to depression of the central nervous system (narcosis)</p>
Irritation	
Eye (rabbit)	: 0.1 and 0.02ML of undiluted Tagsol MP caused moderate to severe eye injury in rabbits (score 4/10 obtained). Repeated applications of 1 drop of Tagsol MP for 5 days produced only mild transitory irritation with no corneal injury.
Skin (rabbit)	: Constant contact for several weeks was required to produce very mild irritation.
Skin absorption (rabbit)	: Toxic effects can be produced by skin absorption but only with very high or prolonged exposures. Deaths due to anesthesia resulted from repeated doses in the range 7-10ml/kg (5days-wk, 90 days). There was also moderate, marked kidney damage at those levels. Lower doses produces only mild anesthesia and no other effects
Inhalation	
Short-term	: Rats exposed to 10 000 ppm (Tagsol MP) for 6 hrs developed microscopic changes revealing slight local irritation and congestion in the lungs. CNS depression and increased liver weights were reported in rats and mice exposed 6 hrs/day for 9 days to 3000ppm Tagsol MP. No effects on the bone marrow, testes and lymphoid tissue were found.
Long-term	: Rate exposed to 6000ppm for 16 weeks, and a small number of monkeys and rabbits exposed to 1500ppm or more for 5-29 weeks, showed slight local irritation and congestion in the lungs. No effects on the lungs were seen in rabbits or monkeys exposed to 800ppm. Rats and rabbits were exposed to atmospheres containing 0.300, 1000 and 3000ppm Tagsol MP (6hrs/day, 5 days/week for 13 weeks). Mild CNS depression was observed in the first few days of exposure to 3000ppm. The effect disappeared after 1-2 weeks of exposure, indicating a tolerance to the CNS effects of PGME. Increased liver weights were found only in rate at 3000ppm but no liver damage. No effects on the kidneys. Blood or testes were found

Long-term ingestion (rat, dog)	: In three studies, repeated doses of Tagsol MP (up to approx. 3g/kg) produced kidney injury in both dogs and rats, and liver injury in rats at the higher doses. Lower chronic doses had no toxic effects. Both the rats and dogs experienced mild to severe central nervous system (CN) depression in a dose related manner. Higher doses (rat) produced deaths due to anesthesia
Developmental/Reproductive Effects	: there were no testicular effects in male rats or rabbits exposed to 600ppm, 6 hrs/day for 10 consecutive days. No significant reproductive effects were found for pregnant rats and rabbits when given injections of Tagsol MP or exposed to 200-3000ppm (6hrs/day) during gestation. There were mild signs of maternal toxicity, lethargy and reduced weight gain in both species, as well as fetal toxicity. Rat pups showed slight delay in bone formation, but this was considered minor
Mutagenicity	: Tagsol MP gave negative results in a bacterial test, with and without metabolic activation. It did not increase unscheduled DNA synthesis nor the number of chromosomal aberrations in cultured mammals.

12 ECOLOGICAL INFORMATION

Aquatic toxicity-fish	: No data available.
Aquatic toxicity-Daphnia	: No data available
Aquatic toxicity- Algae	: No data available
Mobility and biodegradation Potential	: No data available
Bio-accumulation	No data available
German WGK	No data available

13 DISPOSAL CONSIDERATIONS

Incinerate under controlled conditions in accordance with all local and national laws and regulations.
 Empty containers may contain flammable and hazardous residues and are subject to controlled disposal. Empty containers can only be disposed of when the remaining waste products adhering to the container have been removed. Always obey hazard warnings

Consult your local or regional authorities.

14 TRANSPORT INFORMATION

UN NUMBER	: 3092
SUBSTANCE ID NUMBER	: 3092
ADR/RID:	
CLASS	: 3-Flammable liquid
ITEM No.	:
Hazard Identity No.	:

IMDG	Shipping Name	
	Class	: 3.3
	Packaging Group	: 111
	Marine Pollutant	
	EMS No.	
	MFAG TABLE No.	
IATA	Shipping Name	: 1 Methoxy-2-propanol
	Class	: Flammable liquid

15 REGULATORY INFORMATION

EEC HAZARD CLASSIFICATION	: Not available.
Risk phrases	: Flammable. Irritating to eyes
Safety phrases	: Avoid contact with skin. In case of eye contact, rinse with plenty of water and seek medical attention
National Legislation	: Hazardous substances Act 15 of 1973 and Regulations, Occupational Health and Safety ACT 85 of 1993

16 OTHER INFORMATION

CAS No.	: 1569-02-4; 1320-67-8
EINECS No.	: 203-539-1
EEC ANNEX 1 No.	: Not available.
MITI No.	: Not available.
FDA LIST No.	: Not available.
LISTING – TOSCA	: Not available.
LISTING – ACOIN	: Not available.
LISTING – CANADIAN DSL/NDSL	: Not available.
NOTIFICATION – EEC	: Not available.
NOTIFICATION - USA	: Not available.
References	: MSDS – Canadian Centre for Occupational Health and Safety. Record No. 145 references contained therein.
Date of Printing	: 12/05/2004
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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 standards 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.