



TAG SOLVENT PRODUCTS (PTY)LTD.

MATERIAL SAFETY DATA SHEET METHYL ETHYL KETONE

1 CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Common name	: Methyl ethyl ketone.		
Supplier	: TAG Solvent Products Mallet Road/Weg Knights Germiston 1401 Republic of South Africa TEL: +27 11 822-1600		
Synonym	: 2-Butanone, 3-Butanone, Methyl acetone, Ethyl methyl ketone		
Trade name	: MEK		
Material uses	: Lacquer thinners, epoxy thinners, resins, polyurethane adhesives.		

2 COMPOSITION / INFORMATION ON INGREDIENTS

Name	CAS#	% By Weight	Exposure Limits
MEK	78-93-3	99.5	ACGIH TLV (United States, 2002). TWA: 200 ppm TWA: 590 mg/m ³ STEL: 300 ppm STEL: 885 mg/m ³ OSHA PEL Z2 (United States, 2002). TWA: 200 ppm TWA: 590 mg/m ³

3 HAZARDS IDENTIFICATION

Physical state and appearance	: Liquid.
Emergency overview	: DANGER! EXTREMELY FLAMMABLE LIQUID AND VAPOUR. VAPOUR MAY CAUSE FLASH FIRE. HARMFUL IF UNHALED OR SWALLOWED. CAUSES SEVERE EYE IRRITATION. CAUSES RESPIRATORY TRACT AND SKIN IRRITATION. Keep away from heat, sparks and flame. Avoid contact with eyes, skin and clothing. Do not ingest. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.
Routes of entry	: Eye contact. Ingestion. Inhalation. Skin contact. Target Organs: Eyes, skin, respiratory system, central nervous System.
Potential acute health effects	
Eyes	: Extremely hazardous in case of eye contact (irritant). Inflammation of the eye is characterized by redness, watering and itching.
Skin	: Hazardous in case of skin contact. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
Inhalation	: Very hazardous in case of inhalation (lung irritant).
Ingestion	: very hazardous in case of ingestion. May be fatal if swallowed.
Potential chronic health effects	: CARCINOGENIC EFFECTS: Not listed MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. TERATOGENIC EFFECTS: Not listed
Medical conditions aggravated by overexposure	: Persons with pre-existing skin, eye, respiratory or neurological conditions might be more sensitive. Persons also exposed to isobutanol might be more sensitive, as MEK is a metabolite of isobutanol.
Overexposure/signs/Symptoms	: Immediate effects (acute): eye irritation, skin irritation. HARMFUL IF INHALED. May affect the brain, nervous system and respiratory system, causing dizziness, headache, nausea and respiratory irritation. Mild to moderate irritant. Prolonged/repeated exposure may result in dermatitis.

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. Get medical attention.
Skin contact	: In the case of contact, flush the skin with plenty of water for at least 15 minutes while removing the contaminated clothing and shoes. Cold water may be used. Cover the irritated skin with an emollient. Cold water may be used. Wash clothes before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Inhalation	: If inhaled, remove to fresh air. If not breathing apply artificial respiration. If breathing is laboured, give oxygen. Get medical attention immediately.

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.
Notes to physician	: Support respiratory and cardiovascular function.

5 *FIRE FIGHTING MEASURES*

Flammability of the product	: Flammable
Autoignition temperature	: 515°C (959°F)
Flash points	: CLOSED CUP: -9°C (15.8°F). OPEN CUP: 9°C (48.2°F).
Flammable limits	: LOWER: 1.4% UPPER: 11.4%
Products of combustion	: These products are carbon oxides (CO, CO ₂)
Fire hazards in presence of various substances	: Extremely flammable in the presence of open flames, sparks, of heat and oxidizing materials, poisons, organic peroxides and radioactive materials. Avoid copper. MEK vapours must not come in contact with Potassium Tert-Butoxide ignition occurs after 1-0.5min
Explosion hazards in presence of various substances	: Explosive when exposed to flames. MEK reacts with hydrogen peroxide + nitric acid to form a heat and shock sensitive explosive product. Mixtures with 2-Propanol produce explosive peroxide during storage.
Fire fighting media and instructions	: SMALL FIRE: Use DRY chemical powder. 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	: Most vapours are heavier than air. They spread along the ground and collect in low or confined areas (sewers, basement, tanks). Many liquids are heavier than water.
Special remarks on explosive hazards	: Containers may explode if heated. May polymerize explosively when or involved in a fire. Vapour explosion hazard indoors, outdoors or in sewers.

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	: 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 touch spilled material. Use water spray to reduce vapours. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal.

7 *HANDLING AND STORAGE*

Handling	: Keep away from heat sparks and flame. Keep container closed. Use only with adequate ventilation. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.
Storage	: Store in segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

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	
Body	
Eyes	: Splash goggles.
Respiratory	: Chemical resistant protective suite. : Vapour respirator. Be sure to use an approved/certified or equivalent. Wear appropriate respirator when ventilation is inadequate.
Hands	: Butyl rubber gloves.
Feet	: Chemical resistant safety boots.
Protective clothing	: Splash goggles. Full chemical resistant protective suit. Vapor respirator. Butyl gloves. Chemical resistant boots.
Personal protection in case of large spills	: Splash goggles. Full suit. Vapor 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 name Methyl ethyl ketone	Exposure limits ACGIH TLV (United States, 2002). TWA: 200 ppm TWA: 590 mg/m ³ STEL: 300 ppm STEL: 885 mg/m ³ OSHA PEL Z2 (United States, 2002). TWA: 200 ppm TWA: 590 mg/m ³
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9 *PHYSICAL AND CHEMICAL PROPERTIES*

Physical state and appearance	: Liquid.
Colour	: Colourless. Clear.
Odor	: SWEET. Pleasant. Pungent. Acetone-like
Taste	: Not available.
Molecular weight	: 72.12 g/mole
Molecular formula	: C4-H8-O
PH (1% soln/water)	: Not available.
Boiling/condensation point	: 79.6°C (175.3°F)
Melting/freezing point	: -86.3°C (-123.3°F)
Critical temperature	: 262.5 °C
Specific gravity	: 0.805(water=1)
Vapor pressure	: 77.5 mm of Hg (@20°C)
Vapor density	: 2.5 (Air=1)
Volatility	: Volatile (100% vlv).
Odor threshold	: 0.25 ppm
Evaporation rate	: 2.7(Butyl acetate = 1)
VOC	: 100 (%)
Viscosity	: 0.41cP.
LogK_{ow}	: The product is more soluble in oil; log(oil/water) = 0.29.
Iconicity (in water)	: No data available.
Dispersion properties	: See solubility in water.
Solubility	: Soluble in water, ether, acetone and benzene.
Physical chemical comments	: No additional remark.

10 STABILITY AND REACTIVITY

Stability and reactivity	: The product is stable.
Conditions of instability	: High temperatures.
Incompatibility with various substances	: Keep away from explosives, oxidizing agents, poisons, organic peroxides, radioactive materials and copper. Contact of solid Potassium Tert-Butoxide with the vapours of MEK can ignite after 1-0.5min. Alkalis, amines, inorganic acids, isocyanates, alcohols, pyridines.
Hazardous decomposition products	: When heated to decomposition, MEK emits acrid smoke and fumes.
Hazardous polymerization	: Will not occur.

11 TOXICOLOGICAL INFORMATION

Toxicity to animals	: Acute oral toxicity (LD50): 2737 mg/kg [Rat]. Acute dermal toxicity (LD50): 13000 mg/kg [Rabbit]. Acute toxicity of the vapour (LC50): 13500 mg/m ³ 8 hour(s) [Rat].
Chronic effects on humans	: MUTAGENIC EFFECTS: Mutagenic for bacteria and/or yeast. Causes damage to the following organs: kidneys, lungs, liver, brain, eyes.
Other toxic effects on humans	: No specific information is available in our database regarding the other toxic effects of this material for humans.
Special remarks on toxicity to animals	: No additional remark.
Special remarks on chronic effects on humans	: Embryotoxic and/or foetotoxic in animal. Detected in material milk in humans. Passes through the placental barrier in human.
Special remarks on other toxic effects on humans	: No additional remark.

12 ECOLOGICAL INFORMATION

Ecotoxicity	: Aquatic LC50: 5640mg/l/24 hr [bluegill sunfish]. Aquatic LC50: 1950mg/l/24 hr [Brine shrimp]. EC50: 10 000-20 000 ppm ASRI Test (Sasol results). EC50: 100-10 000 ppm Pseudomonas putida Growth Inhibitions Test (ISO Draft – Sasol results). EC%; 3000-10 000 Algal growth Inhibition Test (OECD 201 – Sasol results). Toxic to aquatic life in high concentrations. Notify local health and wildlife officials.
BOD and COD	: BOD 5: 1.515-1.92 mg/l in 5 days (Std dilution technique, normal sewage seed). COD: 2.20-2.31 mg/l. BOD: 61% in 28 days CO ₂ Evolution Test (Modified Strum OECD 301B) and the EU C.4-C. (Sasol results).
Biodegradable/OECD	: Biodegradable from OECD
Mobility	: Not available
Products of degradation	: Carbon oxides (CO, CO ₂)
Toxicity of the products of biodegradation	: The products of degradation are less toxic than the product itself..
Special remarks on the products of biodegradation	: MEK is highly degradable in aerobic systems using sludge, sewage seed or on inoculum from polluted surface water. Degradation is complete in about 5-10 days. No information concerning the bioconcentration of MEK is available. However, it has a very low octanol water partition function (log P=0.29) which indicates that bioaccumulation will not be a significant transport process.



13 DISPOSAL CONSIDERATIONS

Waste information	: Waste must be disposed of in accordance with federal, state and local environmental control regulations.
Waste stream	: RCRA Hazardous Waste: D001, RQ of 5000lbs.







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 1193	ETHYL METHYL KETONE (METHYL ETHYL KETONE)	3	II	<input type="checkbox"/>	Reportable quantity 5000 lbs. (2268 kg)
TDG Classification	UN 1193	ETHYL METHYL KETONE (METHYL ETHYL KETONE)	3	II	<input type="checkbox"/>	

IMDG Classification	UN 1193	ETHYL METHYL KETONE (METHYL ETHYL KETONE)	3	II		
IATA-DGR Classification	UN 1193	ETHYL METHYL KETONE (METHYL ETHYL KETONE)	3	II		

15 REGULATORY INFORMATION

HCS Classification	: Class: Flammable liquid having flash point lower than 37.8°C (100°F)																				
U.S. Federal regulations	: TSCA 8(b) inventory: Methyl ethyl ketone																				
	<p>SARA 302/304/311/312 extremely hazardous substances: No reports were found. SARA 302/304 emergency planning and notification: No products were found. SARA 302/304/311/312 hazardous chemicals: No products were found. SARA 311/312 MSDS distribution- chemical inventory – hazardous identification: NO products were found SARA 313 toxic chemical notification and release reporting: Methyl ethyl ketone</p> <p>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.</p>																				
State regulations	: Pennsylvania RTK: Methyl ethyl ketone Florida: Methyl ethyl ketone Massachusetts: Methyl ethyl ketone New Jersey: Methyl ethyl ketone California prop. 65: No products were found.																				
EU regulations	<table border="0"> <tr> <td>Hazardous symbol(s)</td> <td></td> <td></td> </tr> <tr> <td>Classification</td> <td colspan="2">: Highly flammable, irritant.</td> </tr> <tr> <td>Risk phrases</td> <td colspan="2">: R11 – Highly flammable. R36 – Irritating to eyes. R66 - Repeated exposure may cause skin dryness or cracking. R67 – Vapours may cause drowsiness and dizziness.</td> </tr> <tr> <td>Safety phrases</td> <td colspan="2">: S9 – Keep container in a well-ventilated place. S16 – Keep away from sources of ignition – No smoking.</td> </tr> <tr> <td>EINECS Number</td> <td colspan="2">: 201-159-0</td> </tr> </table>						Hazardous symbol(s)			Classification	: Highly flammable, irritant.		Risk phrases	: R11 – Highly flammable. R36 – Irritating to eyes. R66 - Repeated exposure may cause skin dryness or cracking. R67 – Vapours may cause drowsiness and dizziness.		Safety phrases	: S9 – Keep container in a well-ventilated place. S16 – Keep away from sources of ignition – No smoking.		EINECS Number	: 201-159-0	
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16 OTHER INFORMATION

National Fire Protection Association (U.S.A.)	
References	<ul style="list-style-type: none"> - The Sigma-Aldrich Library of Chemical Safety data, Edition II. - Hazardous Substance Data Bank. - RTECHS. - Chemical Hazards and Response Information System. - Cesars, The Chemical Evaluation Search and retrieval System. - LOLI Database: The regulated List of Lists. - CHEMINFO: Canadian Centre for Occupational Health and Safety, Issue: 97-3 (August 1997). – BDH; Hazard Data Disk, Version 3. – CESARS: Chemical Evaluation and Retrieval System, Produced by: Ontario Ministry of Environment and Michigan Department of Natural Resources, Issue 97-3 (August 1997). – TOMES Plus System: Toxicology, Occupational Medicine & Environmental Series: incorporating: - MEDITEX, HAZARDTEXT, 1st Medical Response Protocols, INFOTEXT, HSDB, CHRIS, OHM/TAD, IRIS, NIOSH Pocket Guide, RTECS, NJ Facts Sheets, North American Emergency Response Guides, REPROTEXT, REPROTOX, TERIS, Shepard's Catalog of Teraogenic Agents.
Other special considerations	: No additional remarks.
Date of Printing	: 02-03-2004
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Version	
Verified by	

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 it's 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.