



Philippine Prosperity Chemicals, Inc.

MATERIAL SAFETY DATA SHEET

Date Reviewed :
January 04, 2010

METHYL ETHYL KETONE

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name: METHYL EHTYL KETONE
Product Code: MEK
Product Type Chemical Solvent
Company: Philippine Prosperity Chemicals, Inc.
Office Address: U1201 Picadilly Star Building
4th Ave. cor 27th St. Fort Bonifacio Global City, Taguig
Plant Addresses: (1) LMG Bulk Terminal – Pinamucan, Batangas
(2) Nagtahan Terminal Inc. – Pandacan, Manila
(3) PPCI In-land Bulk Terminal – Guiguinto, Bulacan
Contact Numbers: Tel: (632) 621-3104 to 09
Fax: (632) 659-6874
Emergency Numbers: Mobile: 0917.5845496 / 0917.5845509

2. COMPOSITION/INFORMATION ON INGREDIENTS

Substance Formal Name: Butan-2-one
Substance Chemical Formula: $\text{CH}_3\text{COCH}_2\text{CH}_3$
Common name: Methyl Ethyl Ketone
Synonyms: Ethyl Methyl Ketone, Methyl Acetone
Chemical Abstract Service Registry Number (CAS RNs): 78-93-3

3. HAZARDS IDENTIFICATION

Emergency overview: Warning! Flammable liquid and vapor! Harmful if swallowed or inhaled. Cause irritation to eyes and respiratory tract. Affects central nervous system. At high concentration, it is harmful if absorbed through skin and may also cause irritation.

Human Health Hazards:

Inhalation: Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. Causes respiratory tract irritation. Irritation may lead to chemical pneumonitis and pulmonary edema. May cause numbness in the extremities.

Ingestion: May cause irritation of the digestive tract. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure.



Skin Contact: May be absorbed through the skin in harmful amounts. Prolonged and/or repeated contact may cause irritation and/or dermatitis.

Eye Contact: Vapors cause eye irritation. Splashes cause severe irritation, possible corneal burns and eye damage.

Chronic Exposure: Chronic inhalation may cause effects similar to those of acute inhalation. Prolonged or repeated skin contact may cause defatting and dermatitis. Animal studies have reported that fetal effects/abnormalities may occur when maternal toxicity is seen.

Aggravation of Pre-existing Conditions: Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of the substance.

4. FIRST AID MEASURES

Inhalation: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Obtain medical attention immediately.

Ingestion: Obtain medical attention immediately. Do not induce vomiting unless directed to do so by a medical personnel. Never give anything by mouth to an unconscious person.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. If persistent irritation occurs, obtain medical attention. Wash clothing before reuse.

Eye Contact: Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. If persistent irritation occurs, obtain medical attention.

5. Fire Fighting Measure

Fire: Flammable liquid and vapor!
Flash point: -9 °C (15.8 °F)
Auto ignition temperature: 404 °C (759.2 °F)
Flammable limits in air based on pure MEK % by volume:
Lower Flammable Limit: 1.4; Upper Flammable Limit: 11.4

Explosion: Vapor-air mixtures are explosive within flammable limits at normal temperature or condition. Vapors can flow along surfaces to distant ignition source and flash back. Contact with strong oxidizers may cause fire. Sensitive to static discharge.

Extinguishing media: Dry chemical, alcohol-resistant foam or carbon dioxide. Water spray may only be used to keep fire exposed containers cool, dilute spills to nonflammable mixtures, protect personnel attempting to stop leak and disperse vapors.



- Unsuitable extinguishing media:* Do not use a solid stream or jet of water, since the stream will scatter and spread the fire.
- Special Information:* All storage areas should be provided with adequate firefighting facilities and equipment. The liquid produces a vapor that forms explosive mixtures with air especially in conditions at above flash point temperatures. In the event of a fire, contact the nearest fire station. For the company's own firefighters, they should wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full face piece operated in the pressure demand or other positive pressure mode.
- Special Remarks on Fire Hazards:* Reaction with Hydrogen Peroxide and nitric acid forms heat and shock-sensitive explosive product.
- Special Firefighting Procedure:* Stay upwind. Use self-contained breathing apparatus and protective clothing. Vapor may explode if ignited in an enclosed area. Cool exposed containers with water.

6. ACCIDENTAL CONTROL MEASURES

- Personal precautions:* Avoid contact with skin and eyes. Ventilate area of leak or spill thoroughly. Do not breathe vapor. Remove all heat or ignition sources. Evacuate the area of all non-essential personnel. Shut off leaks, if possible without personal risk.
- Personal protection:* Wear appropriate personal protective equipment (PPE) as specified in Section 8.
- Environmental precautions:* Contain and recover liquid when possible with an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand or earth) and place in a chemical waste container. Do not use combustible materials such as saw dust. Use non-sparking tools and equipment. Prevent from spreading or entering into drains, ditches, rivers and other waterways by using sand, earth or other appropriate barriers.
- Clean-up methods - small spillage:* Remove all ignition sources and ventilate area. Evacuate all non-essential personnel. Stop leak if without risk. Dilute with water and mop up, or absorb with an inert dry material and place in a sealable container. Label and seal waste containers for product recovery or appropriate disposal (see Section 13).
- Clean-up methods – large spillage:* For large liquid spills (say more than a drum), remove all ignition sources. Evacuate all non-essential personnel. Stop leak if possible and without risk. Do not flush away residues with water. Blanket spill with alcohol resistant foam to limit evaporation or dike area to contain spill and absorb with earth, sand or other non-combustible material. Transfer to a labeled, sealable container for product recovery or proper disposal. Wear appropriate protective clothing to minimize contact with skin. Allow residues to evaporate or soak up with a suitable absorbent material and dispose safely and appropriately (see Section 13).



7. HANDLING AND STORAGE

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| <i>Handling:</i> | Protect self against physical damage. Avoid contact with skin, eyes and clothing. Do not breathe vapor. Use only in well ventilated areas. |
| <i>Handling temperature:</i> | Ambient. |
| <i>Storage:</i> | Keep container tightly closed in a cool, dry and well-ventilated place. Outside or detached storage is preferred. Separate from oxidizing materials. Storage and use areas should be No Smoking areas. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product. |
| <i>Storage temperature:</i> | Ambient. Warning! At normal condition, a flammable / explosive vapor-air mixture forms. |
| <i>Product transfer:</i> | Metal containers should be bonded and grounded for transfers to avoid static sparks. |
| <i>Recommended materials:</i> | For containers or container linings, use mild steel or stainless steel. Refer to appropriate sources or compatibility charts if using internal coating materials. |
| <i>Unsuitable materials:</i> | Most plastic, aluminum, natural neoprene or nitrile rubbers. |
| <i>Other Information:</i> | Methyl ethyl ketone is available from PPCI in bulk and in drums. Details are available upon request. |

8. EXPOSURE CONTROL / PERSONAL PROTECTION

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| <i>Engineering Control Measure / Ventilation System:</i> | A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, <i>Industrial Ventilation, A Manual of Recommended Practices</i> , most recent edition, for details. |
| <i>Occupational Exposure Limit and Standard:</i> | American Conference of Governmental Industrial Hygienist (ACGIH) |
| <i>Limit type:</i> | Threshold Limit Value (TLV) - the level of exposure that the typical worker can experience without an unreasonable risk of disease or injury. |
| <i>Unit:</i> | Parts per million (ppm) |
| <i>Value:</i> | 200 |



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| <i>Respiratory protection:</i> | Where local exhaust ventilation is not practicable, wear a full face-piece or a double cartridge respirator with organic vapor canister NPF 400. It may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-face-piece positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres. |
| <i>Hand protection:</i> | PVC gloves, chemical resistant gloves or nitrile gloves. |
| <i>Eye protection:</i> | Use chemical safety goggles with side shields or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area. |
| <i>Body Protection:</i> | Wear impervious protective clothing such as one-piece overall, including safety shoes or boots, gloves, laboratory coat, apron or any appropriate cotton-made clothing to prevent skin contact. |
| <i>Specific Hygiene Measures:</i> | Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Always maintain and practice good housekeeping. |

9. PHYSICAL AND CHEMICAL PROPERTIES

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| <i>Appearance:</i> | Clear, colorless liquid |
| <i>Odor:</i> | Acetone-like pleasant |
| <i>Initial boiling point:</i> | 79.6 °C (175.3 °F) |
| <i>Freezing point:</i> | -86 °C (-122.8 °F) |
| <i>Vapor Pressure:</i> | 10.3 kPa @ 20 °C |
| <i>Specific Gravity:</i> | 0.805 @ 20 °C |
| <i>Solubility:</i> | Miscible in water |
| <i>Dynamic viscosity:</i> | 0.42 centipoise (cP) @ 25 °C |
| <i>Vapor density (air=1):</i> | 2.5 |
| <i>Flash point:</i> | -9 °C |
| <i>Auto-ignition temperature:</i> | 404 °C |
| <i>Upper flammable limit in air:</i> | 11.4 % (v/v) |
| <i>Lower flammable limit in air:</i> | 1.4 % (v/v) |
| <i>Molecular weight:</i> | 72.12 g/mole |
| <i>Evaporation rate, (NBAC = 1):</i> | 2.7 |



10. STABILITY AND REACTIVITY

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| <i>Stability:</i> | Stable under normal temperature and pressure for use and storage. Hygroscopic. |
| <i>Conditions to avoid:</i> | Heat, flames, ignition sources and incompatibles. Slowly decomposed by moisture. |
| <i>Materials to avoid:</i> | Incompatible with chloroform, copper, hydrogen peroxide, nitric acid, potassium t-butoxide, 2-propanol, chlorosulfonic acid, strong oxidizers, amines, ammonia, inorganic acids, isocyanates, caustics, pyridines. Vigorous reaction with chloroform +alkali |
| <i>Hazardous decomposition products:</i> | Carbon dioxide and carbon monoxide may form when heated to decomposition. |

11. TOXICOLOGICAL INFORMATIONS

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| <i>Basis for assessment:</i> | Information given is based on product data. |
| <i>Oral rat, LD₅₀</i> | 2,737 mg/kg |
| <i>Inhalation rat, LC₅₀</i> | 23,500 ppm /8 Hours |
| <i>Skin rabbit, LD₅₀</i> | 6,840 mg/kg |
| <i>Eye irritation:</i> | Moderate irritant. |
| <i>Skin irritation:</i> | Moderate irritant. |
| <i>Respiratory toxicity:</i> | Chest tightness and wheezing have also been reported in humans. |
| <i>Human effects:</i> | Repeated or prolonged exposure may cause dermatitis due to the defatting action on the skin. Higher concentrations may cause effects as detailed in acute ingestion. Investigated as a tumorigenic, mutagenic, and reproductive effector. |

12. ECOLOGICAL INFORMATION

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| <i>Basis for assessment:</i> | Information given is based on product data. |
| <i>Environmental Fate:</i> | |
| <i>Water:</i> | This product is water soluble and is expected to remain primarily in water. Low acute toxicity to aquatic organisms is expected. |
| <i>Soil:</i> | Highly Mobile. Should be removed readily from soils by volatilization and biodegradation. |
| <i>Air:</i> | This material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals and expected to have a half-life between 1 and 10 days. This material may be removed from the atmosphere to a moderate extent by wet deposition. |



METHYL ETHYL KETONE

Bioaccumulation: The bioconcentration factor (BCF) for MEK can be estimated to be 0.64. This indicates that MEK will not bioconcentrate in aquatic organisms and bioaccumulate.

Environmental Toxicity: The LC₅₀/96Hr values for fish are over 100 mg/L. This material is not expected to be toxic to aquatic life.

13. Disposal Considerations

Precautions: Refer to Sections 7 before handling the product or containers.

Waste disposal: Whatever MEK cannot be saved for recovery or treating, it should be managed in an appropriate and approved waste disposal facility. Care should in any case be taken to ensure disposal is compliant with statutory or regulatory requirements and local environmental laws.

Product disposal: This product is not suitable for disposal by either landfill or via local sewers, drains, natural streams or rivers. The following advice only applies to the product as supplied. Processing, use or contamination of this product may change the waste management options.

Container disposal: Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not pressure cut, weld, braze, solder, drill, grind or expose such containers to heat, flame, sparks, static electricity, or other sources of ignition. Send to drum handlers that clean, recondition or metal reclaimer. Disposal of container and unused contents must be in accordance to local regulatory requirements and environmental laws.

14. TRANSPORT INFORMATION

UN Number: 1193

Hazard Class 3 (Flammable Liquid)

Proper shipping name: Methyl ethyl ketone

Packing Group II (Flash point: -9 °C)

15. OTHER INFORMATION

Philippine Prosperity Chemicals, Inc. provides the information contained herein in good faith and was obtained from sources which we believe are reliable. However, the information is provided without any warranty. The condition or methods of handling storage, use and disposal are beyond our control and may be beyond our knowledge. For this and any other reasons, we don't assume responsibility and disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use and disposal of the product. This document is intended only as a guideline to the appropriate precautionary handling of the material by properly trained personnel using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.