# Material Safety Data Sheet

**LA2161**
**Methyl Ethyl Ketone**

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Id:** LA2161
**Product Name:** Methyl Ethyl Ketone
**Synonyms:** 2-Butanone, 3-Butanone, Butanone, Ethyl Methyl Ketone, MEK, Methyl acetone, Methyl-2-propanone.
**Chemical Family:** Ketone
**Application:** Solvent, diluent, chemical feedstock, or fuel.

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**Prepared By:** The Environment, Health and Safety Department of Univar Canada Ltd.
**Preparation date of MSDS:** 15/Mar/2016
**Telephone number of preparer: 1-866-686-4827**

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## 2. HAZARDS IDENTIFICATION

**Potential Acute Health Effects:**
**Eye Contact:** Causes eye irritation. Symptoms of exposure may include: a burning sensation, redness, swelling and blurred vision.
**Skin Contact:** May cause moderate skin irritation. Burning sensation may result. Repeated or prolonged contact may cause defatting and drying of skin which may result in skin irritation and dermatitis.
**Inhalation:** Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing and difficulty breathing. If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath and fever. High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.
**Ingestion:** May cause headache, dizziness, nausea, vomiting, gastrointestinal irritation and central nervous system depression. Aspiration hazard! Small amounts aspirated into the lungs during ingestion or vomiting may cause lung injury, possibly leading to death. Symptoms of aspiration into the lungs include coughing, gasping, choking, shortness of breath, bluish discolored skin, rapid breathing and heart rate. Chemical pneumonitis from aspiration may result in fever. Pulmonary edema or bleeding, drowsiness, confusion, coma and seizures may occur in more serious cases. Symptoms may develop immediately or as late as 24 hours after the exposure, depending on how much chemical entered the lungs.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

| Ingredients | Percentage (W/W) | LD50s and LC50s Route & Species: |
|---|---|---|

| | | |
|---|---|---|
| Methyl Ethyl Ketone<br>78-93-3 | 100 | Oral LD50 (Rat) 2600 mg/kg<br>Inhalation LC50 (Mouse) 32 g/m$^3$<br>Inhalation LC50 (Rat, male) 11300 ppm (4-hour exposure)<br>Dermal LD50 (Rabbit) 6400 mg/kg |

**Note:** No additional remark.

## 4. FIRST AID MEASURES

**Eye Contact:** Flush eyes with gently flowing water for at least 15 minutes or until the chemical is removed, while holding the eyelid(s) open. Take care not to rinse the contaminated water into the unaffected eye or face. Seek immediate medical attention.
**Skin Contact:** Remove contaminated clothing, including shoes, after flushing has begun. Flush with copious amounts of water. If irritation persists or signs of toxicity occur, seek medical attention.
**Inhalation:** If symptoms are experienced, remove source of contamination or move victim to fresh air. If symptoms persist, get medical attention. If breathing has stopped, trained personnel should begin artificial respiration (AR) immediately. If breathing is difficult, give oxygen. In situations where administering oxygen is appropriate, first aiders must be trained in the safe use and handling of oxygen. It is preferable to administer oxygen under a doctor's supervision or advice. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation (CPR) immediately. Immediate medical assistance is required.
**Ingestion:** Seek immediate medical attention. Do NOT induce vomiting. Never give anything by mouth to an unconscious or convulsing person. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs. If breathing has stopped, trained personnel should begin artificial respiration (AR) immediately. If the heart has stopped, trained personnel should begin cardiopulmonary resuscitation (CPR) immediately.
**Notes to Physician:** Treatment based on sound judgment of physician and individual reactions of patient.

## 5. FIRE FIGHTING MEASURES

**Flash Point:** -9 - (-4) °C / 16 - (25) °F
**Flash Point Method:** Closed cup.
**Autoignition Temperature:** 404-515°C /759-959°F
**Flammable Limits in Air (%):** Lower: 1.8% Upper: 11.5%
**Extinguishing Media:** Use DRY chemicals, CO2, alcohol foam or water spray.
**Special Exposure Hazards:** Flammable Liquid. Isolate and restrict area access. Stop leak only if safe to do so. Move containers from fire area if you can do it without risk. Fight fire from a safe distance and from a protected location. Use fine water spray or fog to control fire spread and cool adjacent structures or containers. This material may produce a floating fire hazard in extreme fire conditions. Vapors are heavier than air and may accumulate in low areas. Vapors may travel along the ground to be ignited at distant locations. Do not allow runoff to enter waterways or sewer.
**Hazardous Decomposition/Combustion Materials (under fire conditions):** A complex mixture of airborne solids, liquids, and gases including carbon monoxide, carbon dioxide, and unidentified organic compounds will be evolved when this material undergoes combustion.
**Special Protective Equipment:** Wear protective clothing and self-contained breathing apparatus. For small outdoor fires, which may easily be extinguished with a portable fire extinguisher, use of an SCBA is optional.
**NFPA RATINGS FOR THIS PRODUCT ARE:** HEALTH 1, FLAMMABILITY 3, INSTABILITY 0
**HMIS RATINGS FOR THIS PRODUCT ARE:** HEALTH 2, FLAMMABILITY 3, REACTIVITY 0

## 6. ACCIDENTAL RELEASE MEASURES

**Personal Precautionary Measures:** Wear appropriate protective equipment.
**Environmental Precautionary Measures:** Prevent entry into sewers or streams, dike if needed. Consult local authorities.
**Procedure for Clean Up:** Flammable liquid. Isolate hazard area and restrict access. Stop leak only if safe to do so. Remove ignition sources and work with non-sparking tools. Small spills: soak up with absorbent material and scoop into containers. Large spills : prevent contamination of waterways. Dike and pump into suitable containers. Clean up residual with absorbent material, place in appropriate container and flush with water.

## 7. HANDLING AND STORAGE

**Handling:** Flammable. For industrial use only. Handle and open containers with care. Avoid contact with eyes, skin and clothing. Do not ingest. Avoid inhalation of chemical. DO NOT handle or store near an open flame, heat, or other sources of ignition. Fixed equipment as well as transfer containers and equipment should be grounded to prevent accumulation of static charge. DO NOT pressurize, cut, heat, or weld containers. Empty containers may contain hazardous product residues. Keep the containers closed when not in use. Protect against physical damage. Use appropriate personnel protective equipment. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (<= 10 m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Extinguish any naked flames.
**Storage:** Store in a cool, dry, well ventilated area, away from heat and ignition sources. Keep containers tightly closed. Store out of direct sunlight and on an impermeable floor.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Engineering Controls:**

Local exhaust ventilation as necessary to maintain exposures to within applicable limits. Use explosion proof equipment.
**Respiratory Protection:** If exposure exceeds occupational exposure limits, use an appropriate NIOSH approved respirator. In case of spill or leak resulting in unknown concentration, use a NIOSH approved supplied air respirator.
**Gloves:**

Impervious gloves. Butyl rubber gloves. Silver Shield (R). 4H(R).
**Skin Protection:** Skin contact should be prevented through the use of suitable protective clothing, gloves and footwear, selected for conditions of use and exposure potential. Consideration must be given both to durability as well as permeation resistance.
**Eyes:** Chemical goggles; also wear a face shield if splashing hazard exists.
**Other Personal Protection Data:** Ensure that eyewash stations and safety showers are proximal to the work-station location.

| Ingredients | Exposure Limit - ACGIH | Exposure Limit - OSHA | Immediately Dangerous to Life or Health - IDLH |
|---|---|---|---|
| Methyl Ethyl Ketone | = 200 ppm TWA<br>= 300 ppm STEL | 200 ppm TWA<br>590 mg/m$^3$ TWA<br>300 ppm STEL<br>885 mg/m$^3$ STEL | 3000 ppm |

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**Physical State:** Liquid
**Color:** Clear
**Odor:** Sweet Ketone
**pH** Not Available.
**Specific Gravity:** 0.804-0.806
**Boiling Point:** 79-80.5°C / 174-176.9°F
**Freezing/Melting Point:** -86°C / -123°F
**Vapor Pressure:** 10.33 kPa (77.5 mmHg) @ 20°C
**Vapor Density:** 2.41
**% Volatile by Volume:** 100
**Evaporation Rate:** 2.7 (ether =1)
**Solubility:** Completely miscible.
**VOCs:** 100%
**Viscosity:** 0.52 cS
**Molecular Weight:** 72.11
**Other:** Not Available.

## 10. STABILITY AND REACTIVITY

**Chemical Stability:** Stable.
**Hazardous Polymerization:** Will not occur.
**Conditions to Avoid:** Avoid excessive heat, open flames and all ignition sources.

## 10. STABILITY AND REACTIVITY

**Materials to Avoid:** Oxidizing agents. Strong alkalis. Strong bases. Reducing agents. Amines. Ammonia. Aldehydes. Halogens. Hydrogen peroxide.
**Hazardous Decomposition Products:** Peroxides.
**Additional Information:**

No additional remark.

## 11. TOXICOLOGICAL INFORMATION

**Principle Routes of Exposure**

**Ingestion:** May cause headache, dizziness, nausea, vomiting, gastrointestinal irritation and central nervous system depression. Aspiration hazard! Small amounts aspirated into the lungs during ingestion or vomiting may cause lung injury, possibly leading to death. Symptoms of aspiration into the lungs include coughing, gasping, choking, shortness of breath, bluish discolored skin, rapid breathing and heart rate. Chemical pneumonitis from aspiration may result in fever. Pulmonary edema or bleeding, drowsiness, confusion, coma and seizures may occur in more serious cases. Symptoms may develop immediately or as late as 24 hours after the exposure, depending on how much chemical entered the lungs.
**Skin Contact:** May cause moderate skin irritation. Burning sensation may result. Repeated or prolonged contact may cause defatting and drying of skin which may result in skin irritation and dermatitis.
**Inhalation:** Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing and difficulty breathing. If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath and fever. High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.
**Eye Contact:** Causes eye irritation. Symptoms of exposure may include: a burning sensation, redness, swelling and blurred vision.

**Additional Information:** Methyl Ethyl Ketone (MEK) is expected to cause no or mild skin irritation. Repeated or prolonged contact can produce dermatitis (red, dry, itchy skin) and whitening of the skin. Animal evidence suggests that MEK is a moderate to severe eye irritant. Brief exposures to MEK vapors produced slight nose and throat irritation. Higher exposures are expected to cause central nervous system depression with symptoms such as headache, nausea, dizziness, drowsiness, and confusion. Extremely high concentrations may cause loss of consciousness and possibly death. Ingestion of MEK is expected to cause central nervous system depression with symptoms such as headache, nausea, dizziness, drowsiness, and confusion. Animal evidence suggests that MEK can be aspirated (inhaled) into the lungs during ingestion or vomiting. Aspiration of even a small amount of liquid could result in a life threatening accumulation of fluid in the lungs. Severe lung damage (edema), respiratory failure, cardiac arrest and death may result. Animal studies have confirmed synergism between MEK and ethyl n-butyl ketone, methyl n-butyl ketone, n-hexane, carbon tetrachloride, 2,5- hexanedione and chloroform. Principal target organs involved in toxicological interactions are the nervous system and liver, although the lung has also been implicated.

**Acute Test of Product:**
**Acute Oral LD50:** Not Available.
**Acute Dermal LD50:** Not Available.
**Acute Inhalation LC50:** Not Available.

**Carcinogenicity:**

| Ingredients | IARC - Carcinogens | ACGIH - Carcinogens |
|---|---|---|
| Methyl Ethyl Ketone | Not listed. | Not listed. |

**Carcinogenicity Comment:** No additional information available.

**Reproductive Toxicity/ Teratogenicity/ Embryotoxicity/ Mutagenicity:** Methyl ethyl ketone - three animal studies have shown fetotoxicity (skeletal anomalies) at doses which did not produce any or only very slight maternal toxicity.

## 12. ECOLOGICAL INFORMATION

**Ecotoxicological Information:**

| Ingredients | Ecotoxicity - Fish Species Data | Acute Crustaceans Toxicity: | Ecotoxicity - Freshwater Algae Data |
|---|---|---|---|
| Methyl Ethyl Ketone | 3130 - 3320 mg/L LC50 (Pimephales promelas) 96 h flow-through | Not Available. | Not Available. |

**Other Information:**
Environmental Fate: Biodegradation: Extensive data demonstrate that Methyl Ethyl Ketone (MEK) is readily biodegradable. Determinations in freshwater and seawater demonstrated that the BOD was a high percentage of the theoretical oxygen demand. Studies on activated sludge showed that MEK is easily degraded and is not toxic to sludge microorganisms in concentrations up to 800 ug/liter. Photo degradation - Although MEK is less reactive in smog than many other organic chemicals, it does undergo significant photodecomposition probably because of a combination of direct photolysis and OH radical reactions. In the presence of 5 ppm NO, and with 35-40% relative humidity and 10 ppm MEK, a photodecomposition half-life of 9.8 hours was found. The half-life of MEK calculated in urban conditions is likely to be about 5.5 hours.
Bioaccumulation: No direct information is available on the ability of MEK to accumulate in biological material. Its high water solubility, rapid degradation by aquatic bacteria, and low octanol-water partition coefficient of 0.26 suggest that it is unlikely to concentrate in aquatic species. Metabolic studies in man demonstrate that concentrations likely to be present in the environment will not lead to accumulation in human tissues.

## 13. DISPOSAL CONSIDERATIONS

**Disposal of Waste Method:** Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations.
**Contaminated Packaging:** Empty containers should be recycled or disposed of through an approved waste management facility.

## 14. TRANSPORT INFORMATION

**DOT (U.S.):**
**DOT Shipping Name:** METHYL ETHYL KETONE
**DOT Hazardous Class** 3
**DOT UN Number:** UN1193
**DOT Packing Group:** II
**DOT Reportable Quantity (lbs):** 5000
**Note:** No additional remark.
**Marine Pollutant:** No.

**TDG (Canada):**
**TDG Shipping Name:** METHYL ETHYL KETONE
**Hazard Class:** 3
**UN Number:** UN1193
**Packing Group:** II
**Note:** No additional remark.
**Marine Pollutant:** No.

## 15. REGULATORY INFORMATION

**U.S. TSCA Inventory Status:** All components of this product are either on the Toxic Substances Control Act (TSCA) Inventory List or exempt.

**Canadian DSL Inventory Status:** All components of this product are either on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.

**U.S. Regulatory Rules**

| Ingredients | CERCLA/SARA - Section 302: | SARA (311, 312) Hazard Class: | CERCLA/SARA - Section 313: |
|---|---|---|---|
| Methyl Ethyl Ketone | Not Listed. | Listed | Not Listed. |

**California Proposition 65:** Not Listed.
**MA Right to Know List:** Listed.
**New Jersey Right-to-Know List:** Listed.
**Pennsylvania Right to Know List:** Listed.

**Additional Notes:** Not Available.

**WHMIS Hazardous Class:**
B2 FLAMMABLE LIQUIDS
D2B TOXIC MATERIALS

## 16. OTHER INFORMATION

**Additional Information:** This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

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*****END OF MSDS*****