SAFETY DATA SHEET

Methyl Ethyl Ketone

SECTION 1: IDENTIFICATION

Product identifier used on a label:	**Methyl Ethyl Ketone**
Product code:	2062
HS Code:	291412
CAS number:	78-93-3
Recommended use of the chemical and restrictions on use:	Laboratory and industrial use.
Chemical family:	Organic chemical, ketone.
Name, address and phone # of supplier:	Aqua Bond Inc. 440 Passmore Ave. Toronto, ON, M1V 5J8 (416) 754-7211
24 Hr. Emergency phone #	**CANUTEC (613) 996-6666**

SECTION 2: HAZARDS IDENTIFICATION

Classification of the chemical: This material is classified as hazardous under U.S. OSHA regulations (29CFR 1910.1200) (Hazcom 2012) and Canadian WHMIS regulations (Hazardous Products Regulations) (WHMIS 2015).

Hazard classification:
FLAMMABLWE LIQUIDS: CATEGORY 2 – Highly flammable liquid or vapour.
EYE DAMAGE/IRRITATION: CATEGORY 2A – Causes serious eye irritation.
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE): CATEGORY 3 (Target organs – Central nervous system) – May cause drowsiness or dizziness.
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE): CATEGORY 2 (Target organs – Kidney, Liver) – May cause damage to organs through prolonged or repeated exposure.

Label elements:



Signal word: Danger

Hazard statements:
H225: Highly flammable liquid or vapour.
H319: Causes serious eye irritation.
H336: May cause drowsiness or dizziness.
H373: May cause damage to organs through prolonged or repeated exposure.

Precautionary statements:
Prevention
P210: Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P233: Keep container tightly closed.
P240: Ground/Bond container and receiving equipment.
P241: Use explosion-proof electrical/ventilating/lightning equipment.
P242: Use only non-sparkling tools.

P243: Take precautionary measures against static discharge.
P260: Do not breathe dust/fume/gas/mist/vapours/spray.
P264: Wash hands thoroughly after handling.
P271: Use only outdoors or in well-ventilated area.
P280: Wear protective gloves/eye protection/face protection.

Response

P314: Get medical advice/attention if you feel unwell.
P370+P378: In case of fire: Use CO_2, alcohol resistant foam, water spray or dry chemical to extinguish.

Skin:

P303+P361+P353: IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

Eyes:

P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P337+P313: If eye irritation persists: Get medical advice/attention.

Inhalation:

P304+P340: IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
P312: Call a POISON CENTER or doctor/physician if you feel unwell.

Storage

P403+P233: Store in well-ventilated place. Keep container tightly closed.
P403+P235: Store in a well-ventilated place. Keep cool.
P405: Store Locked up.

Disposal

P501: Dispose of contents/container in accordance with applicable regional, national and local laws and regulations.

Other hazards: Not available.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Pure substance/ mixture: Pure substance

Ingredient name	**CAS Number**	**Concentration (wt. %)**
Methyl Ethyl Ketone	78-93-3	100%

SECTION 4: FIRST-AID MEASURES

Description of first aid measures:

Ingestion	Drink large quantities of water. Give activated carbon (20-40 g in a suspension of 10%). Do not give fatty oil and milk. Keep airway open. Immediatelly get medical attention.
Inhalation	Remove to fresh air. If not breathing, give artificial respiration. Keep airway open. Get medical attention immediately. If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician. Eliminate all ignition sources if safe to do.
Skin contact	In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention if symptoms occur.

Eye contact — Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Get medical attention.

Most important symptoms and effects, both acute and delayed:
After absorption of large quantities: Central nervous system disorders, inebriation, blood pressure drop, narcosis, cardiac arrhythmias. Chronic uptake results in damage of: Liver, kidneys. In case of inhalation: Mucous membrane irritation, cough, shortage of breath, fatigue, drowsiness, dizziness. In case of ingestion: Nausea and vomiting. After contact with skin: May cause irritations. Danger of cutaneous absorbtion.
Indication of any immediate medical attention and special treatment needed: Not available.
Protection of first-aiders: First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste.

SECTION 5: FIRE-FIGHTING MEASURES

Extinguishing media:	
Suitable	Use CO_2, alcohol resistant foam, water spray or dry chemical powder.
Unsuitable	Do not use straight stream of water.
Flash point:	-7°C / 19.4 °F
Autoignition Temperature:	-404°C / 759.2 °F
Special hazards arising from the substance:	
Hazardous thermal decomposition products:	Peroxides; Carbon monoxide (CO); Carbon dioxide (CO_2).
Specific hazards:	Flammable liquid and vapour. Vapours are heavier than air and will travel at floor level. Explosive mixtures with air may even form at room temperature. Vapours may travel great distances and cause fire and backflashes. In enclosed areas: risk of suffocation! Hazardous vapours may form during fires. In case of fire may be liberated: Peroxides; Carbon monoxide (CO); Carbon dioxide (CO_2).
Special protective actions for fire-fighters:	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool. Do not allow water used to extinguish fire to enter drains, ground or waterways.
Special protective equipment for fire-fighters:	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it is not effective in spill situations where direct contact with the substance is possible.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures:	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material.

	Do not breathe vapor or mist. Provide adequate ventilation.Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. Wear chemical goggles, body-covering protective clothing, chemical resistant gloves, and rubber boots. Keep combustibles (wood, paper, oil, clothing, etc.) away from spilled material. Avoid dust formation. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). All equipment used when handling the product must be grounded. A vapour-suppressing foam may be used to reduce vapours. Do not get water inside containers. Do not expose spill to water.
Environmental precautions:	Should not be released into environment. Prevent from reaching drains, sewer, or waterway.
Methods and materials for containment and cleaning up:	Wear protective eyeware, gloves, and clothing. Refer to Section 8. Always obey local regulations. Containerize for disposal. Refer to Section 13. If necessary use trained response staff or contractor. Evacuate personnel to safe areas.Adsorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Use clean, non-sparkling tools to collect absorbed material. Ventilate area after clean-up is complete. Keep in suitable closed containers for disposal.
Special spill response procedures:	In case of transportation accident, contact CHEMTREC at 1-800-424-9300.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling:	Avoid generation of vapours/aerosols. Put on appropriate personal protective equipment. Avoid exposure – obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep away from sources of ignition – No smoking. Take precautionary measures against static discharges. Do not weld. Avoid sparks. Use only spark proof tools. Vapors may form explosive mixtures with air. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Do not reuse container.
Conditions for safe storage:	Store in accordance with local regulations. Store in a segregated and approved area. Store protected from direct sunlight in a dry, cool and well-ventilated area, keep away from incompatible materials, food, drink and animal feeding stuffs. Do not store together with combustible or self-igniting materials or any highly flammable solids. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be resealed and kept upright. Do not store in unlabeled containers.
Incompatible materials:	Strong oxidizing agents, strong acids, string alkalis.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters:

Exposure limits

Ingredient	**Exposure limits**
Methyl Ethyl Ketone	OSHA Permissible Exposure Limit (PEL) – 200 ppm (TWA) OSHA Permissible Exposure Limit (PEL) – 590 mg/m^3 (TWA) ACGIH Threshold Limit Value (TLV) – 200 ppm (TWA) ACGIH Threshold Limit Value (TLV) – 300 ppm (STEL) NIOSH Immediately Dangerous to Life or Health – 3000 ppm (IDLH) NIOSH Immediately Dangerous to Life or Health – 200 ppm (TWA) NIOSH Immediately Dangerous to Life or Health – 590 mg/m^3 (TWA) NIOSH Immediately Dangerous to Life or Health – 300 ppm (STEL) NIOSH Immediately Dangerous to Life or Health – 885 mg/m^3 (STEL)
Engineering controls:	Use with adequate ventilation. Use explosion-proof electrical/ventilating/lightning equipment. Ensure that eyewash stations and safety showers are close to the workstation locations. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Individual protection measures:	Eyes/face: Chemical splash goggles and face shield. Skin: Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Respiratory: Wear appropriate respirator where spray mist occurs. Be sure to use a NIOSH approved dust and mist respirator or equivalent. Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Colorless liquid.
Odor:	Characteristic – sweet.
Odor threshold:	Not available.
pH:	Not available.
Melting point:	-86°C (-122.8°F)
Freezing point:	Not available.
Initial boiling point and boiling range:	79.6°C (175.28°F)
Flash point:	-9°C (15.8°F) to -6°C (21.2°F)
Evaporation rate:	Not available.

Methyl Ethyl Ketone

Flammability (solid, gas):	Not applicable.
Upper and lower flammability limits:	11.4 vol %/1.4 vol %
Vapour pressure:	105hPa
Vapour density:	1.15 g/L
Relative density:	0.81 g/ml
Solubility in Water:	270 g/L
Partition coefficient n-octanol/water:	0.3 log P(o/w)
Auto-ignition temperature:	404°C (759.2°F)
Decomposition temperature:	Not available.
Viscosity:	0.405 mPa*s at 25°C (77°F)

SECTION 10: STABILITY AND REACTIVITY

Reactivity:	Highly flammable liquid and vapour. Vapours may form explosive mixtures with air.
Chemical stability:	Stable under normal storage and handling conditions.
Possibility of hazardous reactions:	Hazardous polymerization will not occur.
Conditions to avoid:	Protect from heat and direct sunlight.
Incompatible materials:	Strong oxidizing agents, strong acids, strong alkalis. Exothermic reactions with: Oxidizing agents (Chromium trioxide, chloroform/alkali hydroxide). Ignition hazard! Release of highly flammable gas/vapour. Danger of explosion with: Hydrogen peroxide/nitric acid, hydrogen peroxide/sulfuric acid. Unsuitable materials include various plastics.
Hazardous decomposition products:	Peroxides; Carbon monoxide (CO); Carbon dioxide (CO_2).

SECTION 11: TOXICOLOGICAL INFORMATION

Toxicity data (78-93-3):	LD50 Rat Oral: 2483 mg/kg LD50 Rat Oral: 2737 mg/kg LD50 Rabbit Dermal: 5000 mg/kg LD50 Rabbit Dermal: 6480 mg/kg LC50 Rat Inhalation:11700 ppm/4h
Information on the likely routes of exposure:	Inhalation, ingestion, skin absorption.
Potential health effects (acute):	Material is irritating to mucous membranes and upper respiratory tract. Increased susceptibility to the effects of this material may be observed in people with pre-existing disease of any of the following: central nervous system, eyes, respiratory system, and skin. Prolonged or repeated overexposure may cause any of the following: conjunctivitis, dermatitis. High concentrations have caused embryotoxic effects in laboratory animals. Aspiration may occur during swallowing of vomiting, resulting in lung damage. Ingestion may cause headache, nausea, vomiting, dizziness, and drowsiness.
Delayed and immediate	No data available.

effects, chronic effects from short and long term exposure:

Potential chronic health effects:	No data available.
Carcinogenicity:	No data available.
Mutagenicity:	No data available.
Teratogenicity:	No data available.
Developmental effects:	No data available.
Fertility effects:	No data available.
Sensitization:	Can irritate the skin causing a rash. Breathing can irritate the nose and throat causing coughing and wheezing.
Toxicological effects:	No data available.
Acute toxicity:	No data available.
Irritation/corrosion:	Contact can severely irritate and burn the eyes.

Specific target organ toxicity single exposure: Exposure can cause dizziness, light-headedness, headache, nausea, and blurred vision

Specific target organ toxicity repeated exposure: Repeated high exposure can damage the nervous system and may affect the brain.

Aspiration hazard: No data available.

SECTION 12 ECOLOGICAL INFORMATION

Toxicity(78-93-3): Fish: LC50 Pimephalespromelas (Fathead minnow): 2993 mg/L/96h (OECD 203)
Daphnia: EC50 Daphnia magma (Big water flea): 308 mg/L/48h (OECD 202)
Algae: EC50 Pseudokirchneriellasubcapitata (green algae): 2029 mg/L/96h (OECD 201)
Effects in sewage plants:
Bacterial toxicity: EC5 Pseudomonas putida: 1150 mg/L/16h

Persistence and degradability:
Degree of elimination: DOC reduction >= 70%
Biodegradability in water: 98%/28 d (OECD 301 D)
Product is readily biodegradable.

Bioaccumulative potential: Not available.

Mobility in soil: The substance is not PBT / vPvB

SECTION 13: DISPOSAL CONSIDERATIONS

Disposal methods: The generation of waste should be avoided or minimized wherever possible.
Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and nonrecyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill

should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

SECTION 14: TRANSPORT INFORMATION

	TDG
UN Number:	UN 1193
UN proper shipping name:	ETHYL METHYLKETONE or METHYL ETHYL KETONE
Transport hazard class:	3
Packing group:	II
Environmental hazard:	No data available.
Special precautions for user:	**Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident.

SECTION 15: REGULATORY INFORMATION

United States

Toxic Substances Control Act (TSCA)	All components are listed.

Canada

Canadian Domestic Substances List (DSL):	All components are listed.

SECTION 16: OTHER INFORMATION

Revision date: January 20, 2020

UN = United Nations

Disclaimer

While the information and recommendations set forth are believed to be accurate as of data hereof, Aqua Bond Inc., makes no warranty with respect thereto and disclaims all liability from reliance thereon.