

Methyl ethyl ketone (MEK)

SECTION 1 IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

Trade name Methyl ethyl ketone (MEK)

Synonyms 2-Butanone, 3-Butanone, methyl acetone, Ethyl methyl ketone

Use Catalyst production, Industrial & Institutional cleaning, Industrial use, Intermediate, Paint and Coatings, Pharmaceutical, Process/Extraction Solvent, Process material, Raw material for chemical processes, Raw material for industry, Raw material for pharmaceuticals, Solvent

Company GreenChem Industries LLC

Address 222 Clematis St #207, West Palm Beach, FL 33401

Telephone CHEMTREC North America Transportation Emergency (24-hr)
CHEMTREC World Wide

(800) 424-9300

(703) 741-5500

E-mail address info@greenchemindustries.com

SECTION 2 HAZARDS IDENTIFICATION

GHS Hazards

Flammable liquids	Category 2
Eye irritation	Category 2A
Specific target organ toxicity - single exposure	Category 3 (Narcotic effects)

LABEL ELEMENTS

Hazard symbols



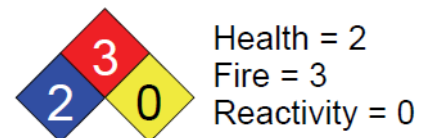
Signal word Danger

Hazard statements H225 Highly flammable liquid and vapour.
H319 Causes serious eye irritation.
H336 May cause drowsiness or dizziness.

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.

· NFPA ratings (scale 0 - 4)



· HMIS-ratings (scale 0 - 4)



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P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P280 Wear protective gloves/ eye protection/ face protection.
P264 Wash skin thoroughly after handling.
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P271 Use only outdoors or in a well-ventilated area.

Response P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.
P370 + P378 In case of fire: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide for extinction.
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.
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 + P405 + P235 Store locked up in a well-ventilated place. Keep cool.

SECTION 3 COMPOSITION/INFORMATION ON INGREDIENTS

<u>Components</u>	<u>CAS-No.</u>	<u>Weight percent</u>
Methyl ethyl ketone	78-93-3	99.5

See Section 8 for Exposure Guidelines and Section 15 for Regulatory Classifications.

SECTION 4 FIRST AID MEASURES

Eye contact Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

Skin contact Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. When symptoms persist or in all cases of doubt seek medical advice. Wash contaminated clothing before re-use.

Inhalation Remove to fresh air. If breathing is irregular or stopped, administer artificial respiration. In case of shortness of breath, give oxygen. Call a physician immediately.

Ingestion If swallowed, call a poison control centre or doctor immediately. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person.

SECTION 5 FIREFIGHTING MEASURES

FLAMMABLE PROPERTIES

Fire/explosion Vapours may form explosive mixture with air. Flash back possible over considerable

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Suitable extinguishing media distance. Use water spray to disperse the vapors. NFPA Class IB flammable liquid. Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Protective equipment and precautions for firefighters In the event of fire, wear self-contained breathing apparatus.

Further information Keep containers and surroundings cool with water spray. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

SECTION 6 ACCIDENTAL RELEASE MEASURES

Methods and materials for containment and cleaning up Evacuate personnel to safe areas. Remove all sources of ignition. Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13). Do not flush into surface water or sanitary sewer system.

SECTION 7 HANDLING AND STORAGE

Safe handling advice Ensure all equipment is electrically grounded before beginning transfer operations. Keep away from heat and sources of ignition.

Storage/Transport pressure Ambient

Load/Unload temperature Ambient

SECTION 8 EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING MEASURES

Air contaminant levels should be controlled below the PEL or TLV for this product (see Exposure Guidelines). Ensure adequate ventilation, especially in confined areas. Use explosion-proof equipment.

PERSONAL PROTECTIVE EQUIPMENT

Eyes Chemical resistant goggles must be worn., Face-shield

Skin Wear suitable protective clothing, gloves and eye/face protection.

Inhalation Respiratory protection is normally not required except in emergencies or when conditions cause excessive airborne levels of mists or vapors. Use NIOSH approved respiratory protection.

EXPOSURE GUIDELINES

<u>Components</u>	<u>Exposure limit(s)</u>
Methyl ethyl ketone	ACGIH TLV (8-hour) 200 ppm 590 mg/m ³ ACGIH STEL 300 ppm 885 mg/m ³ OSHA PEL 200 ppm 590 mg/m ³

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PEL= Permissible Exposure Limits
TLV= Threshold Limit Value
EL= Excursion Limit

TWA= Time Weighted Average (8 hr.)
STEL= Short Term Exposure Limit (15 min.)
WEEL= Workplace Environmental Exposure Level

SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

Appearance liquid;

Colour Clear, colorless

Form liquid

Odour characteristic

Odour Threshold no data available

Flash point -6 °C, 21 °F;

Flammability Upper explosion limit: 11.5 %(V)

Lower explosion limit: 1.5 %(V)

Boiling point/boiling range 79.6 °C, 175.6 °F;

Melting point/range -86 °C, -123 °F;

Auto-ignition temperature 404 °C, 759 °F;

Decomposition temperature no data available

Flammability (solid, gas) no data available

Vapour pressure 126 hPa @ 25 °C, 77 °F;

Vapour density 1.15

Density 0.805 g/cm³ @ 20 °C, 68 °F;

Specific gravity no data available

Water solubility partly miscible

Viscosity no data available

Viscosity, dynamic 0.40 mPa.s @ 20 °C, 68 °F; DIN 53015;

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pH no data available

Evaporation rate no data available

Partition coefficient: n-octanol/water log Pow: 0.3; @ 40 °C, 104 °F;

Volatile organic compounds (VOC) content 100 %

SECTION 10 STABILITY AND REACTIVITY

Reactivity Vapours may form explosive mixture with air.

Chemical stability No decomposition if stored and applied as directed.

Conditions to avoid Extremes of temperature and direct sunlight.

Hazardous decomposition products None known.

Materials to avoid Oxidizing agents

Hazardous polymerisation May form explosive peroxides.

SECTION 11 TOXICOLOGICAL INFORMATION

Acute dermal toxicity LD50 rabbit: > 2,000 mg/kg(literature value)

Acute inhalation toxicity no data available

Acute oral toxicity LD50 rat: > 2,000 mg/kg (literature value)

Skin corrosion/irritation (rabbit) slight irritation, (literature value)

Eye damage/irritation (rabbit) irritating, (literature value)

Respiratory or skin sensitization guinea pig: not sensitizing; Maximisation Test (literature value)

Germ cell mutagenicity **Genotoxicity in vitro:**
Type: Ames test
System: Salmonella typhimurium; with and without metabolic activation
Result: In vitro tests did not show mutagenic effects.
(literature value)

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Genotoxicity in vivo:

no data available

Assessment Mutagenicity:

Based on available data, the classification criteria are not met.

Reproductive toxicity **Reproductive toxicity:**

no data available

Assessment Reproductive toxicity:

no data available

Teratogenicity:

no data available

Assessment teratogenicity:

no data available

STOT - single exposure The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with narcotic effects.

STOT - repeated exposure no data available

Aspiration toxicity no data available

Carcinogenicity **Assessment carcinogenicity:**
Contains no ingredient listed as a carcinogen

SECTION 12 ECOLOGICAL INFORMATION

Toxicity to fish LC50 (Pimephales promelas (fathead minnow)) 96 hours: > 100 mg/l; static test (literature value)

Toxicity to aquatic invertebrates EC50 (Daphnia magna (Water flea)) 48 hours: > 100 mg/l; static test (literature value)

Toxicity to algae EC50 (Pseudokirchneriella subcapitata (green algae)) 96 hours: > 100 mg/l; static test (literature value)

Biodegradation Readily biodegradable.

OECD Test Guideline 301D (28 d): > 60 % (literature value)

Bioaccumulation No bioaccumulation is to be expected (log Pow <= 4).

Mobility in soil no data available

Other adverse effects This substance is not considered to be persistent, bioaccumulating nor toxic (PBT).;

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SECTION 13 DISPOSAL CONSIDERATIONS

Waste Code U159.D001 - Ignitability (RQ 100 LB). Re-evaluation of the product may be required by the user at the time of disposal, since the product uses, transformations, mixtures, contamination, and spillage may change the classification.

Disposal methods Dispose of only in accordance with local, state, and federal regulations. Do not contaminate any lakes, streams, ponds, groundwater or soil.

Empty containers. Empty containers retain product residue (liquid and/or vapor) and can be dangerous. DO NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Empty drums should be completely drained, triple-rinsed, properly bunged and promptly returned to a drum reconditioner, or properly disposed.

SECTION 14 TRANSPORT INFORMATION

DOT UN 1193, Methyl Ethyl Ketone, 3, II
When shipped in quantities greater than 5,000 lbs, RQ must be added to the shipping description.

IATA UN 1193, Methyl Ethyl Ketone, 3, II
When shipped in quantities greater than 5,000 lbs, RQ must be added to the shipping description.

IMDG UN 1193, Methyl Ethyl Ketone, 3, II
When shipped in quantities greater than 5,000 lbs, RQ must be added to the shipping description.

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Remarks no data available

SECTION 15 REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS

OSHA Hazards (HCS 1994)

Flammable liquid, Eye irritant, Respiratory irritant

TSCA Inventory Listing

Components
2-Butanone

CAS-No.
78-93-3

SARA 302 Status

Components

CAS-No.

Weight percent

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SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 311/312 Classification

"Fire hazard", "Immediate (acute) health hazard"

SARA 313 Chemical

Components

CAS-No.

Weight percent

SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

US. EPA CERCLA Hazardous Substances (40 CFR 302)

Components

Reportable Quantity

Weight percent

2-Butanone

5,000 LB

99.5 %

INTERNATIONAL REGULATIONS

WHMIS Classification

Class B, Division 2: Flammable liquid.

Class D, Division 2, Subdivision B: Toxic material.

European Union

Classification according to Regulation (EU) 1272/2008.

Flammable liquids, Category 2

Eye irritation, Category 2

Specific target organ toxicity - single exposure, Category 3 (Narcotic effects)

Australia. Inventory of Chemical Substances (AICS)	Listed
Japan. Inventory of Existing and New Chemical Substances (ENCS)	Listed
Japan. Industrial Safety & Health Law (ISHL) Inventory	Listed
Canada. Domestic Substances List (DSL) Inventory	Listed
Canadian Non-Domestic Substance Listing (NDSL)	Not listed
European Inventory of Existing Commercial Chemical Substances (EINECS) Listing	Listed
Philippines. Inventory of Chemicals / Chemical Substances (PICCS)	Listed
Korea. Existing Chemicals Inventory (KECI)	Listed
China. Inventory of Existing Chemical Substances (IECSC)	Listed
Mexico. National Inventory of Chemical Substances (INSQ)	Listed
New Zealand. Inventory of Chemicals (NZIoC)	Listed
Switzerland. Inventory of Notified New Substances (CHINV)	Listed
Taiwan. National Existing Chemical Inventory (NECI)	Listed

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Please note: The names and CAS numbers which are used for this product in the stated inventories may deviate from the information which is listed in Section 3.

STATE REGULATIONS

California Prop. 65

Components CAS-No. none

SECTION 16 OTHER INFORMATION

HAZARD RATINGS

	<u>Health</u>	<u>Flammability</u>	<u>Physical Hazard/ Instability</u>
HMIS®	2	3	0
NFPA	2	3	0

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