

# Material Safety Data Sheet

## Methyl ethyl ketone

ACC# 14460

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Methyl ethyl ketone

**Catalog Numbers:** AC149670200, AC149670250, AC9565367, S80081, BP209RB-115, BP209RB-19, BP209RB-200, BP209RB-50, BP209RS-200, BP209RS-50, BPM209RB-115, BPM209RB-19, BPM209RB-200, BPM209RB-50, BPM209RS-200, BPM209RS-28, BPM209RS-50, DWM2084, H209RB115, H209RB19, H209RB200, M208 1, M208 20, M208 4, M208-1, M208-20, M208-4, M2081, M20820, M2084, M209 1, M209 20, M209 4, M209 500, M209-1, M209-20, M209-200, M209-4, M209-500, M2091, M20920, M209200, M20920LC, M2094, M2094LC, M209500, M209FB115, M209FB19, M209FB200, M209FB50, M209RB115, M209RB19, M209RB200, M209RS115, M209RS200, M209RS50, M209S 4, M209S-4, M209S4, M209SS115, M209SS200, M209SS28, M209SS50

**Synonyms:** 2-Butanone; Ethyl methyl ketone; MEK; Methyl ethyl ketone.

**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**For CHEMTREC assistance, call:** 800-424-9300

**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
78-93-3	Methyl ethyl ketone	>99%	201-159-0

**Hazard Symbols:** XI F

**Risk Phrases:** 11 36 66 67

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

**Appearance:** colorless liquid. **Flash Point:** -7 deg C. **Danger!** May cause respiratory tract irritation. May cause severe eye and skin irritation with possible burns. May cause fetal effects. May cause central nervous system effects. Extremely flammable liquid and vapor. Vapor may cause flash fire.

**Target Organs:** Central nervous system, eyes, skin, mucous membranes.

**Potential Health Effects**

**Eye:** Causes eye irritation. May result in corneal injury.

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

**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.

**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.

**Chronic:** 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.

#### Section 4 - First Aid Measures

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately. Do NOT allow victim to rub or keep eyes closed.

**Skin:** Get medical aid. Rinse area with large amounts of water for at least 15 minutes. Remove contaminated clothing and shoes.

**Ingestion:** Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid immediately.

**Inhalation:** Get medical aid immediately. Remove from exposure to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

**Notes to Physician:** Treat symptomatically and supportively.

#### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors can travel to a source of ignition and flash back. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Flammable Liquid. Can release vapors that form explosive mixtures at temperatures above the flashpoint. Use water spray to keep fire-exposed containers cool. Water may be ineffective. Material is lighter than water and a fire may be spread by the use of water. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. May polymerize explosively when involved in a fire. Containers may explode when heated.

**Extinguishing Media:** For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Do NOT use straight streams of water. Cool containers with flooding quantities of water until well after fire is out.

#### Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation.

#### Section 7 - Handling and Storage

**Handling:** Use only in a well-ventilated area. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Avoid contact with heat, sparks and flame. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

**Storage:** Keep away from sources of ignition. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

**Section 8 - Exposure Controls, Personal Protection**

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

**Exposure Limits**

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Methyl ethyl ketone	200 ppm TWA; 300 ppm STEL	200 ppm TWA; 590 mg/m3 TWA 3000 ppm IDLH	200 ppm TWA; 590 mg/m3 TWA

**OSHA Vacated PELs:** Methyl ethyl ketone: 200 ppm TWA; 590 mg/m3 TWA; 300 ppm STEL; 885 mg/m3 STEL

**Personal Protective Equipment**

**Eyes:** Wear chemical goggles.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

**Section 9 - Physical and Chemical Properties**

**Physical State:** Liquid

**Appearance:** colorless liquid

**Odor:** sweetish odor - alcohol-like

**pH:** Not available.

**Vapor Pressure:** 71.2 mm Hg

**Vapor Density:** 2.5 (Air=1)

**Evaporation Rate:**2.7 (Ether=1)

**Viscosity:** 0.42 mPas 15 deg C

**Boiling Point:** 80 deg C @ 760mm Hg

**Freezing/Melting Point:**-87 deg C

**Autoignition Temperature:** 404 deg C ( 759.20 deg F)

**Flash Point:** -7 deg C ( 19.40 deg F)

**Decomposition Temperature:**Not available.

**NFPA Rating:** (estimated) Health: 1; Flammability: 3; Reactivity: 0

**Explosion Limits, Lower:**1.4 vol%@200F

**Upper:** 11.4 vol%@200F

**Solubility:** miscible with oils

**Specific Gravity/Density:**.8050g/cm3

**Molecular Formula:**C4H8O  
**Molecular Weight:**72.11

### Section 10 - Stability and Reactivity

**Chemical Stability:** Stable at room temperature in closed containers under normal storage and handling conditions.

**Conditions to Avoid:** Incompatible materials, ignition sources, excess heat.

**Incompatibilities with Other Materials:** Strong oxidizing agents, amines, ammonia, copper, isocyanates, caustics (e.g. ammonia, ammonium hydroxide, calcium hydroxide, potassium hydroxide, sodium hydroxide), chlorosulfonic acid, fuming sulfuric acid, potassium-tert-butoxide, pyridine, chloroform + alkali, hydrogen peroxides + nitric acid, 2-propanol, inorganic acids.

**Hazardous Decomposition Products:** Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

**Hazardous Polymerization:** Has not been reported.

### Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 78-93-3: EL6475000

**LD50/LC50:**

CAS# 78-93-3:

Draize test, rabbit, skin: 500 mg/24H Moderate;

Draize test, rabbit, skin: 402 mg/24H Mild;

Inhalation, mouse: LC50 = 32 gm/m<sup>3</sup>/4H;

Inhalation, rat: LC50 = 23500 mg/m<sup>3</sup>/8H;

Oral, mouse: LD50 = 4050 mg/kg;

Oral, rat: LD50 = 2737 mg/kg;

Skin, rabbit: LD50 = 6480 mg/kg;

**Carcinogenicity:**

CAS# 78-93-3: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

**Epidemiology:** No information available.

**Teratogenicity:** Embryo or Fetus: fetotoxicity, ihl-rat TCLo=1000 ppm. Specific Developmental Abnormalities: craniofacial and urogenital, ihl-rat TCLo=3000 ppm/7H; musculoskeletal, ihl-rat TCLo=1000 ppm.

**Reproductive Effects:** No information available.

**Neurotoxicity:** No information available.

**Mutagenicity:** Sex chromosome loss/non-disjunction: *S. cerevisiae* 33800 ppm.

**Other Studies:** See actual entry in RTECS for complete information.

### Section 12 - Ecological Information

**Ecotoxicity:** Fish: Fathead Minnow: LC50 = 3220 mg/L; 96 Hr; Unspecified Bluegill/Sunfish: LC50 = 1690 mg/L; 96 Hr; Unspecified ria: Phytobacterium phosphoreum: EC50 = 51.9 mg/L; 25 min; Microtox test ria: Phytobacterium phosphoreum: EC50 = 3373 mg/L; 30 min; Microtox test Fathead minnow LC50=3220 mg/L/96H Bluegill TLM=5640 to 1690 mg/L/24 to 96H

**Environmental:** Substance evaporates in water with T1/2= 3D (rivers) to 12D (lakes). Substance is not expected to bioconcentrate in aquatic organisms.

**Physical:** Substance photodegrades in air with T1/2 = 2.3 days.

**Other:** None information available.

**Section 13 - Disposal Considerations**

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** CAS# 78-93-3: waste number U159; (Ignitable waste, Toxic waste).

**Section 14 - Transport Information**

	<b>US DOT</b>	<b>IATA</b>	<b>RID/ADR</b>	<b>IMO</b>	<b>Canada TDG</b>
<b>Shipping Name:</b>	METHYL ETHYL KETONE				METHYL ETHYL KETONE
<b>Hazard Class:</b>	3				3
<b>UN Number:</b>	UN1193				UN1193
<b>Packing Group:</b>	II				II
<b>Additional Info:</b>					FLASHPOINT -9C

**Section 15 - Regulatory Information**

**US FEDERAL**

**TSCA**

CAS# 78-93-3 is listed on the TSCA inventory.

**Health & Safety Reporting List**

CAS# 78-93-3: Effective Date: October 4, 1982; Sunset Date: October 4, 1992

**Chemical Test Rules**

None of the chemicals in this product are under a Chemical Test Rule.

**Section 12b**

None of the chemicals are listed under TSCA Section 12b.

**TSCA Significant New Use Rule**

None of the chemicals in this material have a SNUR under TSCA.

**SARA**

**Section 302 (RQ)**

CAS# 78-93-3: final RQ = 5000 pounds (2270 kg)

**Section 302 (TPQ)**

None of the chemicals in this product have a TPQ.

**SARA Codes**

CAS # 78-93-3: acute, flammable.

**Section 313**

This material contains Methyl ethyl ketone (CAS# 78-93-3, 99%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

**Clean Air Act:**

CAS# 78-93-3 is listed as a hazardous air pollutant (HAP). This material does not contain any Class 1 Ozone depletors. This material does not contain any Class 2 Ozone depletors.

**Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

**OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

**STATE**

CAS# 78-93-3 can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

California No Significant Risk Level: None of the chemicals in this product are listed.

**European/International Regulations**

**European Labeling in Accordance with EC Directives**

**Hazard Symbols:**

XI F

**Risk Phrases:**

R 11 Highly flammable.

R 36 Irritating to eyes.

R 66 Repeated exposure may cause skin dryness or cracking.

R 67 Vapors may cause drowsiness and dizziness.

**Safety Phrases:**

S 16 Keep away from sources of ignition - No smoking.

S 9 Keep container in a well-ventilated place.

**WGK (Water Danger/Protection)**

CAS# 78-93-3: 1

**Canada**

CAS# 78-93-3 is listed on Canada's DSL List. CAS# 78-93-3 is listed on Canada's DSL List.

This product has a WHMIS classification of B2, D2A.

CAS# 78-93-3 is listed on Canada's Ingredient Disclosure List.

**Exposure Limits**

CAS# 78-93-3: OEL-AUSTRALIA:TWA 150 ppm (445 mg/m<sup>3</sup>);STEL 300 ppm (890 mg/m<sup>3</sup>) OEL-AUSTRIA:TWA 200 ppm (590 mg/m<sup>3</sup>) OEL-BELGIUM:TWA 200 ppm (590 mg/m<sup>3</sup>);STEL 300 ppm (885 mg/m<sup>3</sup>) OEL-DENMARK:TWA 100 ppm (290 mg/m<sup>3</sup>);Skin OEL-FINLAND:TWA 150 ppm (440 mg/m<sup>3</sup>);STEL 190 ppm;Skin OEL-FRANCE:TWA 200 ppm (600 mg/m<sup>3</sup>);Skin OEL-GERMANY:TWA 200 ppm (590 mg/m<sup>3</sup>) OEL-HUNGARY:TWA 200 mg/m<sup>3</sup>;STEL 600 mg/m<sup>3</sup> OEL-INDIA:TWA 200 ppm (590 mg/m<sup>3</sup>);STEL 300 ppm (885 mg/m<sup>3</sup>) OEL-JAPAN:TWA 200 ppm (590 mg/m<sup>3</sup>) OEL-THE NETHERLANDS:TWA 200 ppm (590 mg/m<sup>3</sup>) OEL-THE PHILIPPINES:TWA 200 ppm (590 mg/m<sup>3</sup>) OEL-POLAND:TWA 200 mg/m<sup>3</sup> OEL-RUSSIA:TWA 200 ppm;STEL 200 mg/m<sup>3</sup> OEL-SWEDEN:TWA 50 ppm (150 mg/m<sup>3</sup>);STEL 100 ppm (300 mg/m<sup>3</sup>) OEL-SWITZERLAND:TWA 200 ppm (590 mg/m<sup>3</sup>);STEL 400 ppm OEL-TURKEY :TWA 200 ppm (590 mg/m<sup>3</sup>) OEL-UNITED KINGDOM:TWA 200 ppm (590 mg/m<sup>3</sup>);STEL 300 ppm OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

Section 16 - Additional Information

**MSDS Creation Date:** 7/21/1999

**Revision #4 Date:** 3/14/2001

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