

**SIGMA-ALDRICH**

**Material Safety Data Sheet**

Version 3.0  
Revision Date 07/14/2007  
Print Date 04/03/2008

**1. PRODUCT AND COMPANY IDENTIFICATION**

Product name : **2-Butanone**  
Product Number : 110264  
Brand : Sigma-Aldrich  
Company : Sigma-Aldrich  
3050 Spruce Street  
SAINT LOUIS MO 63103  
USA  
Telephone : +1 800-325-5832  
Fax : +1 800-325-5052  
Emergency Phone # : (314) 776-6555

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

Synonyms : MEK  
Ethyl methyl ketone  
Methyl ethyl ketone  
Formula : C<sub>4</sub>H<sub>8</sub>O  
Molecular Weight : 72.11 g/mol

CAS-No.	EC-No.	Index-No.	Concentration [%]
Ethyl methyl ketone			
78-93-3	201-159-0	606-002-00-3	-

**3. HAZARDS IDENTIFICATION**

**Emergency Overview**  
**OSHA Hazards**  
Flammable Liquid  
Delayed target organ effects  
Irritant  
**Target Organs**  
Central nervous system  
**HMIS Classification**  
Health Hazard: 2  
Chronic Health Hazard: \*  
Flammability: 3  
Physical hazards: 0

**NFPA Rating**  
Health Hazard: 2  
Fire : 3

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Reactivity Hazard: 0

**Potential Health Effects**

**Inhalation** : May be harmful if inhaled. May cause respiratory tract irritation. Vapours may cause drowsiness and dizziness.  
**Skin** : May be harmful if absorbed through skin. May cause skin irritation. Repeated exposure may cause skin dryness or cracking.  
**Eyes** : May cause eye irritation.  
**Ingestion** : May be harmful if swallowed.

**4. FIRST AID MEASURES**

**General advice**  
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.  
**If inhaled**  
If breathed in, move person into fresh air. If not breathing give artificial respiration. Consult a physician.  
**In case of skin contact**  
Wash off with soap and plenty of water. Consult a physician.  
**In case of eye contact**  
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.  
**If swallowed**  
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

**5. FIRE-FIGHTING MEASURES**

**Flammable properties**  
Flash point : -3 °C (27 °F) - closed cup  
Ignition temperature : 516 °C (961 °F)  
**Suitable extinguishing media**  
For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.  
**Specific hazards**  
Flash back possible over considerable distance. Container explosion may occur under fire conditions.  
**Special protective equipment for fire-fighters**  
Wear self contained breathing apparatus for fire fighting if necessary.  
**Further information**  
Use water spray to cool unopened containers.

**6. ACCIDENTAL RELEASE MEASURES**

**Personal precautions**  
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.  
**Environmental precautions**  
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.  
**Methods for cleaning up**  
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).

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## 7. HANDLING AND STORAGE

### Handling

Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.  
Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

### Storage

Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Store in cool place. Store under inert gas.

hygroscopic

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### Components with workplace control parameters

Components	CAS-No.	Value	Control parameters	Update	Basis
Ethyl methyl ketone	78-93-3	TWA	200 ppm 590 mg/m <sup>3</sup>	1994-09-01	US. American Conference of Governmental and Industrial Hygienists Threshold Limit Values for Chemical Substances in the Work Environment; Annual Reports for the Year 2004; Committees on Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs)
Remarks	Substances for which there is a Biological Exposure Index or Indices				
		STEL	300 ppm 885 mg/m <sup>3</sup>	1994-09-01	US. American Conference of Governmental and Industrial Hygienists Threshold Limit Values for Chemical Substances in the Work Environment; Annual Reports for the Year 2004; Committees on Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs)
	Substances for which there is a Biological Exposure Index or Indices				
		TWA	200 ppm 590 mg/m <sup>3</sup>	1989-03-01	US. Department of Labor - Occupational Safety and Health Administration (OSHA) 29 CFR 1910.1000 Z-1-A
		STEL	300 ppm 885 mg/m <sup>3</sup>	1989-03-01	US. Department of Labor - Occupational Safety and Health Administration (OSHA) 29 CFR 1910.1000 Z-1-A
		TWA	200 ppm 590 mg/m <sup>3</sup>	1993-06-30	US. Department of Labor - Occupational Safety and Health Administration (OSHA) Permissible

Exposure Limits (PEL) 29 CFR 1910.1000 Air Contaminants.
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### Personal protective equipment

#### Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

#### Hand protection

Handle with gloves.

#### Eye protection

Safety glasses

#### Skin and body protection

Choose body protection according to the amount and concentration of the dangerous substance at the work place.

#### Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Appearance

Form liquid, clear

Colour colourless

### Safety data

pH no data available

Melting point -87 °C (-125 °F)

Boiling point 79 - 80 °C (174 - 176 °F)

Flash point -3 °C (27 °F) - closed cup

Ignition temperature 516 °C (961 °F)

Lower explosion limit 1.8 %(V)

Upper explosion limit 10.1 %(V)

Vapour pressure 95 hPa (71 mmHg) at 20 °C (68 °F)

Density 0.805 g/cm<sup>3</sup>

Water solubility soluble

Partition coefficient:  
n-octanol/water log Pow: 0.29

Vapour density 2.49  
- (Air = 1.0)

## 10. STABILITY AND REACTIVITY

### Storage stability

Stable under recommended storage conditions.

### Conditions to avoid

Heat, flames and sparks.

Exposure to moisture.

**Materials to avoid**

Oxidizing agents, Strong reducing agents

**Hazardous decomposition products**

**Hazardous decomposition products formed under fire conditions.**

Carbon oxides

**Hazardous reactions**

Vapours may form explosive mixture with air.

**11. TOXICOLOGICAL INFORMATION**

**Acute toxicity**

LD50 Oral - rat - 2,737 mg/kg

LC50 Inhalation - mouse - 4 h - 32,000 mg/m<sup>3</sup>

LC50 Inhalation - Mammal - 38,000 mg/m<sup>3</sup>

LD50 Dermal - rabbit - 6,480 mg/kg

**Irritation and corrosion**

Skin - rabbit - Skin irritation - 24 h

**Sensitisation**

no data available

**Chronic exposure**

no data available

**Signs and Symptoms of Exposure**

Central nervous system depression, Gastrointestinal disturbance, narcosis

**Potential Health Effects**

<b>Inhalation</b>	May be harmful if inhaled. May cause respiratory tract irritation. Vapours may cause drowsiness and dizziness.
<b>Skin</b>	May be harmful if absorbed through skin. May cause skin irritation. Repeated exposure may cause skin dryness or cracking.
<b>Eyes</b>	May cause eye irritation.
<b>Ingestion</b>	May be harmful if swallowed.
<b>Target Organs</b>	Central nervous system,

**12. ECOLOGICAL INFORMATION**

**Elimination information (persistence and degradability)**

no data available

**Ecotoxicity effects**

Toxicity to fish	mortality NOEC - Cyprinodon variegatus (sheepshead minnow) - 400 mg/l - 96 h LC50 - Pimephales promelas (fathead minnow) - 3,130 - 3,320 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates.	LC50 - Daphnia magna (Water flea) - > 520 mg/l - 48 h EC50 - Daphnia magna (Water flea) - 7,060 mg/l - 24 h

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Page 5 of 7

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**Further information on ecology**

no data available

**13. DISPOSAL CONSIDERATIONS**

**Product**

Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

**Contaminated packaging**

Dispose of as unused product.

**14. TRANSPORT INFORMATION**

**DOT (US)**

UN-Number: 1193 Class: 3 Packing group: II  
Proper shipping name: Ethyl methyl ketone

**IMDG**

UN-Number: 1193 Class: 3 Packing group: II EMS-No: F-E, S-D  
Proper shipping name: ETHYL METHYL KETONE  
Marine pollutant: No

**IATA**

UN-Number: 1193 Class: 3 Packing group: II  
Proper shipping name: Ethyl methyl ketone

**15. REGULATORY INFORMATION**

**OSHA Hazards**

Flammable Liquid, Delayed target organ effects, Irritant

**TSCA Status**

On TSCA Inventory

**DSL Status**

All components of this product are on the Canadian DSL list.

**SARA 302 Components**

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

**SARA 313 Components**

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.

**SARA 311/312 Hazards**

Fire Hazard, Acute Health Hazard, Chronic Health Hazard

**Massachusetts Right To Know Components**

Ethyl methyl ketone	CAS-No. 78-93-3	Revision Date 1989-12-01
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**Pennsylvania Right To Know Components**

Ethyl methyl ketone	CAS-No. 78-93-3	Revision Date 1989-12-01
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**New Jersey Right To Know Components**

Ethyl methyl ketone	CAS-No. 78-93-3	Revision Date 1989-12-01
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**California Prop. 65 Components**

This product does not contain any chemicals known to State of California to cause cancer, birth, or any other reproductive defects.

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Page 6 of 7

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**16. OTHER INFORMATION**

**Further information**

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