

## Material Safety Data Sheet

Version 4.6

Revision Date 10/12/2012

Print Date 11/04/2013

---

1. PRODUCT AND COMPANY IDENTIFICATION

Product name : 3-Methyl-2-butanone

Product Number : 59600

Brand : Sigma-Aldrich

Supplier : Sigma-Aldrich  
3050 Spruce Street  
SAINT LOUIS MO 63103  
USA

Telephone : +1 800-325-5832

Fax : +1 800-325-5052

Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555

Preparation Information : Sigma-Aldrich Corporation  
Product Safety - Americas Region  
1-800-521-8956

---

2. HAZARDS IDENTIFICATION

## Emergency Overview

## OSHA Hazards

Flammable liquid

## GHS Classification

Flammable liquids (Category 2)

Acute toxicity, Oral (Category 5)

Acute toxicity, Inhalation (Category 5)

Specific target organ toxicity - single exposure (Category 3)

Acute aquatic toxicity (Category 3)

## GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H225

Highly flammable liquid and vapour.

H303 + H333

May be harmful if swallowed or if inhaled.

H336

May cause drowsiness or dizziness.

H402

Harmful to aquatic life.

Precautionary statement(s)

P210

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

P261

Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.

## HMIS Classification

Health hazard: 1

Flammability: 3

Physical hazards: 0

## NFPA Rating

Health hazard: 0

Fire: 3

**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.

**Eyes** May cause eye irritation.

**Ingestion** May be harmful if swallowed.

---

**3. COMPOSITION/INFORMATION ON INGREDIENTS**

Synonyms : Isopropyl methyl ketone  
Methyl isopropyl ketone

Formula : C<sub>5</sub>H<sub>10</sub>O  
Molecular Weight : 86.13 g/mol

| Component                  |              | Concentration |
|----------------------------|--------------|---------------|
| <b>3-Methylbutan-2-one</b> |              |               |
| CAS-No.                    | 563-80-4     | -             |
| EC-No.                     | 209-264-3    |               |
| Index-No.                  | 606-007-00-0 |               |

---

**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**

Flush eyes with water as a precaution.

**If swallowed**

Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

---

**5. FIREFIGHTING MEASURES**

**Conditions of flammability**

Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

**Suitable extinguishing media**

Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

**Special protective equipment for firefighters**

Wear self contained breathing apparatus for fire fighting if necessary.

**Hazardous combustion products**

Hazardous decomposition products formed under fire conditions. - Carbon oxides

**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. Discharge into the environment must be avoided.

### Methods and materials for containment and cleaning up

Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13).

---

## 7. HANDLING AND STORAGE

### Precautions for safe handling

Avoid inhalation of vapour or mist.

Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

### Conditions for safe 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.

---

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Components with workplace control parameters

| Components          | CAS-No.  | Value | Control parameters               | Basis                                                         |
|---------------------|----------|-------|----------------------------------|---------------------------------------------------------------|
| 3-Methylbutan-2-one | 563-80-4 | TWA   | 200 ppm<br>705 mg/m <sup>3</sup> | USA. ACGIH Threshold Limit Values (TLV)                       |
|                     |          | TWA   | 200 ppm<br>705 mg/m <sup>3</sup> | USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000 |

### 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. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

#### Splash protection

Material: butyl-rubber

Minimum layer thickness: 0.3 mm

Break through time: > 30 min

Material tested: Butoject® (Aldrich Z677647, Size M)

data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 873000, e-mail sales@kcl.de, test method: EN374

If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario.

#### Eye protection

Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

#### Skin and body protection

impervious clothing, Flame retardant antistatic protective clothing, The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

#### 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   | clear, liquid |
| Colour | colourless    |

### Safety data

|                                        |                                              |
|----------------------------------------|----------------------------------------------|
| pH                                     | no data available                            |
| Melting point/freezing point           | Melting point/range: -92 °C (-134 °F) - lit. |
| Boiling point                          | 94 - 95 °C (201 - 203 °F) - lit.             |
| Flash point                            | -3 °C (27 °F) - closed cup                   |
| Ignition temperature                   | no data available                            |
| Autoignition temperature               | 448 °C (838 °F) at 980 hPa (735 mmHg)        |
| Lower explosion limit                  | 1.2 %(V)                                     |
| Upper explosion limit                  | 8.2 %(V)                                     |
| Vapour pressure                        | 70 hPa (53 mmHg) at 25 °C (77 °F)            |
| Density                                | 0.805 g/mL at 25 °C (77 °F)                  |
| Water solubility                       | 8.21 g/l at 20 °C (68 °F)                    |
| Partition coefficient: n-octanol/water | log Pow: 2.29 at 20 °C (68 °F)               |
| Relative vapour density                | no data available                            |
| Odour                                  | no data available                            |
| Odour Threshold                        | no data available                            |
| Evaporation rate                       | no data available                            |

---

## 10. STABILITY AND REACTIVITY

### Chemical stability

Stable under recommended storage conditions.

### Possibility of hazardous reactions

Vapours may form explosive mixture with air.

### Conditions to avoid

Heat, flames and sparks. Extremes of temperature and direct sunlight.

### Materials to avoid

Strong oxidizing agents, Strong bases, Strong reducing agents

### Hazardous decomposition products

Hazardous decomposition products formed under fire conditions. - Carbon oxides  
Other decomposition products - no data available

---

## 11. TOXICOLOGICAL INFORMATION

### Acute toxicity

#### Oral LD50

LD50 Oral - rat - male and female - 3,078 mg/kg

**Inhalation LC50**

LC50 Inhalation - rat - male and female - 6 h - 6377 ppm

**Dermal LD50**

LD50 Dermal - rabbit - 6,350 mg/kg

**Other information on acute toxicity**

no data available

**Skin corrosion/irritation**

no data available

**Serious eye damage/eye irritation**

Eyes - rabbit - No eye irritation - 1 h

**Respiratory or skin sensitization**

guinea pig - Does not cause skin sensitization.

**Germ cell mutagenicity**

Genotoxicity in vitro - mouse - lymphocyte - with or without metabolic activation - negative

**Carcinogenicity**

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

**Reproductive toxicity**

no data available

**Teratogenicity**

no data available

**Specific target organ toxicity - single exposure (Globally Harmonized System)**

inhalation (vapour) - May cause drowsiness or dizziness. - Central nervous system

**Specific target organ toxicity - repeated exposure (Globally Harmonized System)**

no data available

**Aspiration hazard**

no data available

**Potential health effects**

|                   |                                                                                                                |
|-------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Inhalation</b> | May be harmful if inhaled. May cause respiratory tract irritation. Vapours may cause drowsiness and dizziness. |
| <b>Ingestion</b>  | May be harmful if swallowed.                                                                                   |
| <b>Skin</b>       | May be harmful if absorbed through skin. May cause skin irritation.                                            |
| <b>Eyes</b>       | May cause eye irritation.                                                                                      |

**Signs and Symptoms of Exposure**

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

**Synergistic effects**

no data available

**Additional Information**

RTECS: EL9100000

## 12. ECOLOGICAL INFORMATION

### Toxicity

|                                                     |                                                                                                                |
|-----------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Toxicity to fish                                    | LC50 - Oncorhynchus mykiss (rainbow trout) - > 68 mg/l - 96 h<br>Method: OECD Test Guideline 203               |
| Toxicity to daphnia and other aquatic invertebrates | static test EC50 - Daphnia magna (Water flea) - > 100 mg/l - 48 h                                              |
| Toxicity to algae                                   | Growth inhibition EC50 - Pseudokirchneriella subcapitata - 44.2 mg/l - 72 h<br>Method: OECD Test Guideline 201 |

### Persistence and degradability

|                  |                                                                                        |
|------------------|----------------------------------------------------------------------------------------|
| Biodegradability | aerobic<br>Result: 85.1 % - Readily biodegradable.<br>Method: OECD Test Guideline 301D |
|------------------|----------------------------------------------------------------------------------------|

### Bioaccumulative potential

no data available

### Mobility in soil

no data available

### PBT and vPvB assessment

no data available

### Other adverse effects

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Harmful to aquatic life.

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. Offer surplus and non-recyclable solutions to a licensed disposal company. 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: 2397    Class: 3    Packing group: II  
Proper shipping name: 3-Methylbutan-2-one  
Reportable Quantity (RQ):  
Marine pollutant: No  
Poison Inhalation Hazard: No

### IMDG

UN number: 2397    Class: 3    Packing group: II    EMS-No: F-E, S-D  
Proper shipping name: 3-METHYLBUTAN-2-ONE  
Marine pollutant: No

### IATA

UN number: 2397    Class: 3    Packing group: II  
Proper shipping name: 3-Methylbutan-2-one

---

## 15. REGULATORY INFORMATION

### OSHA Hazards

Flammable liquid

**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

**Massachusetts Right To Know Components**

|                     |                     |                             |
|---------------------|---------------------|-----------------------------|
| 3-Methylbutan-2-one | CAS-No.<br>563-80-4 | Revision Date<br>1991-07-01 |
|---------------------|---------------------|-----------------------------|

**Pennsylvania Right To Know Components**

|                     |                     |                             |
|---------------------|---------------------|-----------------------------|
| 3-Methylbutan-2-one | CAS-No.<br>563-80-4 | Revision Date<br>1991-07-01 |
|---------------------|---------------------|-----------------------------|

**New Jersey Right To Know Components**

|                     |                     |                             |
|---------------------|---------------------|-----------------------------|
| 3-Methylbutan-2-one | CAS-No.<br>563-80-4 | Revision Date<br>1991-07-01 |
|---------------------|---------------------|-----------------------------|

**California Prop. 65 Components**

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

---

**16. OTHER INFORMATION****Further information**

Copyright 2012 Sigma-Aldrich Co. LLC. License granted to make unlimited paper copies for internal use only. The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

---