

## Material Safety Data Sheet

Date Printed: 15/JUN/2005

Date Updated: 12/MAR/2004

Version 1.4

According to 91/155/EEC

Classified as Hazardous according to the criteria of EU Annex 1 and NOHSC.

---

1 - Product and Company Information

---

Product Name	2-BUTANONE, REAGENTPLUS(TM), >=99%
Product Number	110264
Company	Sigma-Aldrich Pty. Ltd. 12 Anella Avenue Castle Hill NSW 2154 Australia
Technical Phone #	+61 2 9841 0555 (1800 800 097)
Fax	+61 2 9841 0500 (1800 800 096)
Emergency Phone #	+44 8701906777 (1800 448 465)

---

---

2 - Composition/Information on Ingredients

---

Product Name	CAS #	EC no	Annex I Index Number
2-BUTANONE	78-93-3	201-159-0	606-002-00-3

  

Formula	C4H8O
Molecular Weight	72.11 AMU
Synonyms	Acetone, methyl- * Aethylmethylketon (German) * Butanone * 2-Butanone (OSHA) * Butanone 2 (French) * 3-Butanone * Ethyl methyl cetone (French) * Ethylmethylketon (Dutch) * Ketone, ethyl methyl * Meetco * MEK (OSHA) * Methyl acetone * Methyl ethyl ketone (ACGIH:OSHA) * Metiletilchetone (Italian) * Metyloetyloketon (Polish) * RCRA waste number U159

---

---

3 - Hazards Identification

---

## SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT

Highly flammable. Irritating to eyes. Repeated exposure may cause skin dryness or cracking. Vapors may cause drowsiness and dizziness.

---

---

4 - First Aid Measures

---

## AFTER INHALATION

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

## AFTER SKIN CONTACT

In case of contact, immediately wash skin with soap and copious amounts of water.

## AFTER EYE CONTACT

In case of contact, immediately flush eyes with copious amounts

of water for at least 15 minutes.

#### AFTER INGESTION

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

---

### 5 - Fire Fighting Measures

---

#### EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

#### SPECIAL RISKS

Specific Hazard(s): Flammable liquid. Emits toxic fumes under fire conditions.

Explosion Hazards: Vapor may travel considerable distance to source of ignition and flash back. Container explosion may occur under fire conditions.

#### SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

---

### 6 - Accidental Release Measures

---

#### PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area. Shut off all sources of ignition. Use nonsparking tools.

#### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

#### METHODS FOR CLEANING UP

Cover with dry-lime, sand, or soda ash. Place in covered containers using non-sparking tools and transport outdoors. Ventilate area and wash spill site after material pickup is complete.

---

### 7 - Handling and Storage

---

#### HANDLING

Directions for Safe Handling: Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

#### STORAGE

Conditions of Storage: Keep tightly closed. Keep away from heat, sparks, and open flame. Store in a cool dry place. Store under nitrogen.

SPECIAL REQUIREMENTS: Hygroscopic.

---

### 8 - Exposure Controls / Personal Protection

---

#### ENGINEERING CONTROLS

Safety shower and eye bath. Use nonsparking tools. Mechanical exhaust required.

#### GENERAL HYGIENE MEASURES

Remove and wash contaminated clothing promptly. Wash thoroughly after handling.

## EXPOSURE LIMITS

Country	Source	Type	Value
Poland		NDS	200 MG/M3
Poland		NDSch	850 MG/M3
Poland		NDSP	-

## EXPOSURE LIMITS - EUROPEAN UNION

Source	Type	Value
OEL	OEL	600 mg/m3
		200 ppm

## EXPOSURE LIMITS - DENMARK

Source	Type	Value
OEL	TWA	145 mg/m3
		50 ppm

Remarks: H

## EXPOSURE LIMITS - GERMANY

Source	Type	Value
TRGS 900	OEL	600 mg/m3
		200 ppm

Remarks: =1=

Remarks: H,Y

## EXPOSURE LIMITS - NORWAY

Source	Type	Value
	OEL	220 mg/m3
		75 ppm

## EXPOSURE LIMITS - SWITZERLAND

Source	Type	Value
OEL	OEL	590 mg/m3
		200 ppm

Remarks: M C H

## EXPOSURE LIMITS - UNITED KINGDOM

Source	Type	Value
OEL	OEL	600 mg/m3
		200 ppm
OEL	STEL	899 mg/m3
		300 ppm

Remarks: Skin Biological Monitoring Guidance value

## PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator.

Hand Protection: Compatible chemical-resistant gloves.

Eye Protection: Chemical safety goggles.

## 9 - Physical and Chemical Properties

Appearance

Physical State: Clear liquid  
Color: Colorless

Property

Value

At Temperature or Pressure

pH

N/A

BP/BP Range

79 - 80 °C

MP/MP Range

-87 °C

Flash Point

-1 °C

Method: closed cup

Flammability

N/A

Autoignition Temp

516 °C

Oxidizing Properties	N/A	
Explosive Properties	N/A	
Explosion Limits	Lower: 1.8 % Upper: 10.1 %	
Vapor Pressure	71 mmHg	20 °C
SG/Density	0.804 g/cm3	
Partition Coefficient	Log Kow: 0.29	
Viscosity	0.4 Pas	25 °C
Vapor Density	2.49 g/l	
Saturated Vapor Conc.	N/A	
Evaporation Rate	N/A	
Bulk Density	N/A	
Decomposition Temp.	N/A	
Solvent Content	N/A	
Water Content	N/A	
Surface Tension	24.6 mN/m	20 °C
Conductivity	N/A	
Miscellaneous Data	N/A	
Solubility	Solubility in Water:soluble Other Solvents: ALCOHOL, ETHER, ACETONE BENZENE	

---

## 10 - Stability and Reactivity

---

### STABILITY

Stable: Stable.

Conditions to Avoid: Moisture.

Materials to Avoid: Oxidizing agents, Strong reducing agents.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

---

## 11 - Toxicological Information

---

RTECS NUMBER: EL6475000

### ACUTE TOXICITY

LD50  
Oral  
Rat  
2737 mg/kg

LC50  
Inhalation  
Rat  
23,500 mg/m3  
8H

LD50  
Intraperitoneal  
Rat  
607 MG/KG

LD50  
Oral  
Mouse  
4050 mg/kg

LC50  
Inhalation  
Mouse  
32,000 mg/m3  
4H

LD50  
Intraperitoneal  
Mouse  
616 MG/KG

LD50  
Skin  
Rabbit  
6480 mg/kg

LC50  
Inhalation  
Mammal  
38,000 mg/m3

#### IRRITATION DATA

Eyes  
Human  
350 ppm

Skin  
Rabbit  
500 mg  
24H  
Remarks: Moderate irritation effect

Skin  
Rabbit  
402 mg  
24H  
Remarks: Mild irritation effect

Skin  
Rabbit  
13.78 mg  
24H  
Remarks: Open irritation test

Eyes  
Rabbit  
80 mg

#### SIGNS AND SYMPTOMS OF EXPOSURE

Can cause CNS depression. Exposure can cause: Gastrointestinal disturbances. Narcotic effect.

#### ROUTE OF EXPOSURE

Skin Contact: Causes skin irritation.  
Skin Absorption: May be harmful if absorbed through the skin.  
Eye Contact: Causes severe eye irritation.  
Inhalation: Material is irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.  
Ingestion: May be harmful if swallowed.

#### TARGET ORGAN INFORMATION

Central nervous system.

## CHRONIC EXPOSURE - TERATOGEN

Species: Rat  
Dose: 3000 PPM/7H  
Route of Application: Inhalation  
Exposure Time: (6-15D PREG)  
Result: Specific Developmental Abnormalities: Craniofacial (including nose and tongue). Specific Developmental Abnormalities: Urogenital system. Specific Developmental Abnormalities: Homeostasis

Species: Rat  
Dose: 1000 PPM/7H  
Route of Application: Inhalation  
Exposure Time: (6-15D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus). Specific Developmental Abnormalities: Musculoskeletal system.

Species: Mouse  
Dose: 3000 PPM/7H  
Route of Application: Inhalation  
Exposure Time: (6-15D PREG)  
Result: Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

---

## 12 - Ecological Information

---

### ECOTOXICOLOGICAL EFFECTS

Test Type: EC50 Daphnia  
Species: Daphnia magna  
Time: 24 h  
Value: 7,060 mg/l

Test Type: LC50 Fish  
Species: Leuciscus idus  
Time: 48 h  
Value: 4,600 - 4,880 mg/l

Test Type: LC50 Fish  
Species: Pimephales promelas (Fathead minnow)  
Time: 96 h  
Value: 3,130 - 3,320 mg/l

---

## 13 - Disposal Considerations

---

### SUBSTANCE DISPOSAL

Contact a licensed professional waste disposal service to dispose of this material. 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.

---

## 14 - Transport Information

RID/ADR  
UN#: 1193  
Class: 3  
PG: II

Proper Shipping Name: Ethyl methyl ketone

IMDG

UN#: 1193

Class: 3

PG: II

Proper Shipping Name: Ethyl methyl ketone

Marine Pollutant: No

Severe Marine Pollutant: No

IATA

UN#: 1193

Class: 3

PG: II

Proper Shipping Name: Methyl ethyl ketone

Inhalation Packing Group I: No

---

15 - Regulatory Information

---

CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

ANNEX I INDEX NUMBER: 606-002-00-3

INDICATION OF DANGER: F Xi

Highly Flammable. Irritant.

R-PHRASES: 11 36 66 67

Highly flammable. Irritating to eyes. Repeated exposure may cause skin dryness or cracking. Vapors may cause drowsiness and dizziness.

S-PHRASES: 9 16

Keep container in a well-ventilated place. Keep away from sources of ignition - no smoking.

COUNTRY SPECIFIC INFORMATION

Germany

WGK: 1

SWITZERLAND

SWISS POISON CLASS: 5

NORWAY

Labelling for organic solvents where the package is 1liter or more.

YL-tall m3/l: 5090

YL-group: 5

Risk phrases: 20

Harmful by inhalation.

Safety phrases: 38 42 210

In case of insufficient ventilation, wear suitable respiratory equipment. During fumigation/spraying wear suitable respiratory equipment. Use compressed air- or fresh air line breathing apparatus in confined spaces.

---

16 - Other Information

---

WARRANTY

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 Inc.,

shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.  
Copyright 2005 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

DISCLAIMER

For R&D use only. Not for drug, household or other uses.