

Material Safety Data Sheet

acc. to OSHA and ANSI

Printing date 08/02/2009

Reviewed on 07/28/2009

1 Identification of substance:**Product details:****Product name:** 2-Butanone**Stock number:** 31069**Manufacturer/Supplier:**

Alfa Aesar, A Johnson Matthey Company
 Johnson Matthey Catalog Company, Inc.
 30 Bond Street
 Ward Hill, MA 01835-8099
 Emergency Phone: (978) 521-6300
 CHEMTREC: (800) 424-9300
 Web Site: www.alfa.com

Information Department: Health, Safety and Environmental Department**Emergency information:**

During normal hours the Health, Safety and Environmental Department. After normal hours call Chemtrec at (800) 424-9300.

2 Composition/Data on components:**Chemical characterization:****Description: (CAS#)**

2-Butanone (CAS# 78-93-3): 100%

Identification number(s):**EINECS Number:** 201-159-0**Index number:** 606-002-00-3**3 Hazards identification****Hazard description:**

Xi Irritant
 F Highly flammable

Information pertaining to particular dangers for man and environment

R 11 Highly flammable.

R 36 Irritating to eyes.

R 66 Repeated exposure may cause skin dryness or cracking

R 67 Vapours may cause drowsiness and dizziness

Classification system**HMIS ratings (scale 0-4)****(Hazardous Materials Identification System)**

HEALTH	1
FIRE	3
REACTIVITY	1

Health (acute effects) = 1

Flammability = 3

Reactivity = 1

GHS label elements**Danger**

2.6/2 - Highly flammable liquid and vapour.

**Warning**

3.3/2A - Causes serious eye irritation.

3.8/3 - May cause drowsiness or dizziness.

Prevention:

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

Keep container tightly closed.

Ground/bond container and receiving equipment.

Use explosion-proof electrical/ventilating/lighting/equipment.

Use only non-sparking tools.

Take precautionary measures against static discharge.

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

Wash thoroughly after handling.

Use only outdoors or in a well-ventilated area.

Wear protective gloves/protective clothing/eye protection/face protection.

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Response:

IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

Call a POISON CENTER or doctor/physician if you feel unwell.

If eye irritation persists: Get medical advice/attention.

In case of fire: Use for extinction: CO₂, powder or water spray.

Storage:

Store in a well-ventilated place. Keep container tightly closed.

Store in a well-ventilated place. Keep cool.

Store locked up.

Disposal:

Dispose of contents/container in accordance with local/regional/national/international regulations.

4 First aid measures**After inhalation**

Supply fresh air. If required, provide artificial respiration. Keep patient warm.

Seek immediate medical advice.

After skin contact

Immediately wash with water and soap and rinse thoroughly.

Seek immediate medical advice.

After eye contact

Rinse opened eye for several minutes under running water. Then consult a doctor.

After swallowing Seek immediate medical advice.

Information for doctor

The following symptoms may occur:

Dizziness

Nausea

Gastric or intestinal disorders.

Headache

Danger If swallowed or in case of vomiting, danger of entering the lungs.

5 Fire fighting measures

Suitable extinguishing agents CO₂, sand, extinguishing powder. Do not use water.

For safety reasons unsuitable extinguishing agents Water

Special hazards caused by the material, its products of combustion or resulting gases:

In case of fire, the following can be released:

Carbon monoxide and carbon dioxide

Protective equipment:

Wear self-contained respirator.

Wear fully protective impervious suit.

6 Accidental release measures**Person-related safety precautions:**

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventilation

Keep away from ignition sources

Measures for environmental protection:

Do not allow material to be released to the environment without proper governmental permits.

Measures for cleaning/collecting:

Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

Ensure adequate ventilation.

Keep away from ignition sources.

Additional information:

See Section 7 for information on safe handling

See Section 8 for information on personal protection equipment.

See Section 13 for disposal information.

7 Handling and storage**Handling****Information for safe handling:**

Keep container tightly sealed.

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Store in cool, dry place in tightly closed containers.

Ensure good ventilation at the workplace.

Information about protection against explosions and fires:

Keep ignition sources away.

Protect against electrostatic charges.

Fumes can combine with air to form an explosive mixture.

Storage**Requirements to be met by storerooms and receptacles:** Store in a cool location.**Information about storage in one common storage facility:**

Store away from oxidizing agents.

Store away from strong bases.

Further information about storage conditions:

Keep container tightly sealed.

Store in cool, dry conditions in well sealed containers.

8 Exposure controls and personal protection**Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

Components with limit values that require monitoring at the workplace:

2-Butanone (methyl ethyl ketone)

ppm

ACGIH TLV	200; 300-Ceiling
Austria TWA	200
Belgium TWA	200; 300-STEL
Denmark TWA	100 (skin)
Finland TWA	150; 190-STEL (skin)
France TWA	200 (skin)
Germany TWA	200
Hungary TWA	200; 600-STEL
Ireland TWA	200; 300-STEL (skin)
Netherlands TWA	200 (skin)
Poland TWA	200
Russia TWA	200; 200-STEL
Sweden TWA	50; 100-STEL
Switzerland TWA	200; 400-STEL
United Kingdom TWA	200; 300-STEL
USA PEL	200

Additional information: No data**Personal protective equipment****General protective and hygienic measures**

The usual precautionary measures for handling chemicals should be followed.

Keep away from foodstuffs, beverages and feed.

Remove all soiled and contaminated clothing immediately.

Wash hands before breaks and at the end of work.

Avoid contact with the eyes.

Avoid contact with the eyes and skin.

Breathing equipment: Use suitable respirator when high concentrations are present.**Protection of hands:** Impervious gloves**Eye protection:** Safety glasses**Body protection:** Protective work clothing.**9 Physical and chemical properties:****General Information**

Form:	Liquid
Color:	Colorless
Odor:	Acetone-like

Change in condition

Melting point/Melting range:	-87°C (-125°F)
Boiling point/Boiling range:	80°C (176°F)
Sublimation temperature / start:	Not determined

Flash point: -3°C (27°F)**Ignition temperature:** 514°C (957°F)

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Decomposition temperature:	Not determined
Explosion limits:	
Lower:	1.8 Vol %
Upper:	11.5 Vol %
Vapor pressure at 20°C (68°F):	105 hPa (79 mm Hg)
Density at 20°C (68°F):	0.805 g/cm ³
Solubility in / Miscibility with	
Water at 20°C (68°F):	292 g/l
Viscosity:	
dynamic at 20°C (68°F):	0.4 mPas

10 Stability and reactivity**Thermal decomposition / conditions to be avoided:**

Decomposition will not occur if used and stored according to specifications.

Materials to be avoided:

Oxidizing agents

Bases

Dangerous reactions No dangerous reactions known**Dangerous products of decomposition:** Carbon monoxide and carbon dioxide**11 Toxicological information****Acute toxicity:****LD/LC50 values that are relevant for classification:**

Oral	LD50	3000 mg/kg (mouse) 2737 mg/kg (rat)
	LDLo	714.3 mg/kg (human)
Dermal	LD50	6480 mg/kg (rabbit)
	LC50	38000 mg/m ³ (mam)
Inhalative	LC50/4H	32000 mg/m ³ /4H (mouse)
	LC50/8H	23500 mg/m ³ /8H (rat)
	LCLo/30M	97300 mg/m ³ (guinea pig)
	Irritation of skin	mild 402 mg/24H (rabbit)
Irritation of eyes	severe	unknown mg (rabbit)

Primary irritant effect:**on the skin:** Causes mild irritant effect.**on the eye:** Irritating effect.**Sensitization:** No sensitizing effects known.**Other information (about experimental toxicology):**

Reproductive effects have been observed on tests with laboratory animals.

Subacute to chronic toxicity:

2-Butanone is irritating to the eyes, nose and throat. High concentrations may cause numbness of the extremities, dizziness, and drowsiness. It is an experimental teratogen.

Subacute to chronic toxicity:

The Registry of Toxic Effects of Chemical Substances (RTECS) reports the following effects in laboratory animals:

Behavioral - general anesthetic.

Behavioral - ataxia.

Biochemical - Metabolism (Intermediary) - lipids including transport.

Biochemical - Enzyme inhibition, induction, or change in blood or tissue levels - transaminases.

Cardiac - pulse rate.

Gastrointestinal - changes in structure or function of salivary glands.

Immunological Including Allergic - other immediate (humoral): urticaria, allergic rhinitis, serum sickness.

Kidney, Ureter, Bladder - other changes.

Kidney, Ureter, Bladder - urine volume increased.

Liver - other changes.

Liver - changes in liver weight.

Liver - liver function tests impaired.

Lungs, Thorax, or Respiration - other changes.

Lungs, Thorax, or Respiration - respiratory depression.

Lung, Thorax, or Respiration - cough.

Lungs, Thorax, or Respiration - emphysema.

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Peripheral Nerve and Sensation - recording from peripheral motor nerve.
 Peripheral Nerve and Sensation - sensory change involving peripheral nerve.
 Related to Chronic Data - death.
 Reproductive - Specific Developmental Abnormalities - craniofacial (including nose and tongue).
 Reproductive - Specific Developmental Abnormalities - urogenital system.
 Reproductive - Effects on Embryo or Fetus - fetotoxicity (except death, e.g., stunted fetus).
 Reproductive - Specific Developmental Abnormalities - homeostasis.
 Reproductive - Specific Developmental Abnormalities - musculoskeletal system.
 Reproductive - Specific Developmental Abnormalities - gastrointestinal system.
 Sense Organs and Special Senses (Olfaction) - effect, not otherwise specified.
 Sense Organs and Special Senses (Eye) - conjunctive irritation.

Additional toxicological information:
 To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.
 EPA-D: Not classifiable as to human carcinogenicity: inadequate human and animal evidence of carcinogenicity or no data are available.

12 Ecological information:**General notes:**

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
 Do not allow material to be released to the environment without proper governmental permits.

13 Disposal considerations**Product:**

Recommendation Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:

Recommendation: Disposal must be made according to official regulations.

14 Transport information**DOT regulations:**

Hazard class: 3
Identification number: UN1193
Packing group: II
Hazardous substance: 5000 lbs, 2270 kg
Proper shipping name (technical name): ETHYL METHYL KETONE (METHYL ETHYL KETONE)
Label: 3

Land transport ADR/RID (cross-border)

ADR/RID class: 3 (F1) Flammable liquids
Danger code (Kemler): 33
UN-Number: 1193
Packaging group: II
Description of goods: 1193 ETHYL METHYL KETONE (METHYL ETHYL KETONE)

Maritime transport IMDG:

IMDG Class: 3
UN Number: 1193
Label: 3
Packaging group: II

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Marine pollutant: No
Proper shipping name: ETHYL METHYL KETONE (METHYL ETHYL KETONE)

Air transport ICAO-TI and IATA-DGR:

ICAO/IATA Class: 3
UN/ID Number: 1193
Label: 3
Packaging group: II
Proper shipping name: ETHYL METHYL KETONE (METHYL ETHYL KETONE)

UN "Model Regulation": UN1193, ETHYL METHYL KETONE (METHYL ETHYL KETONE), 3, II**15 Regulations****Product related hazard informations:****Hazard symbols:**

Xi Irritant

F Highly flammable

Risk phrases:

11 Highly flammable.

36 Irritating to eyes.

66 Repeated exposure may cause skin dryness or cracking

67 Vapours may cause drowsiness and dizziness

Safety phrases:

9 Keep container in a well-ventilated place.

16 Keep away from sources of ignition - No smoking.

National regulations

All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.

All components of this product are listed on the Canadian Domestic Substances List (DSL).

Information about limitation of use: For use only by technically qualified individuals.**16 Other information:**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing MSDS: Health, Safety and Environmental Department.**Contact:** Zachariah Holt**Abbreviations and acronyms:**

ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)

RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)

IMDG: International Maritime Code for Dangerous Goods

DOT: US Department of Transportation

IATA: International Air Transport Association

IATA-DGR: Dangerous Goods Regulations by the "International Air Transport Association" (IATA)

ICAO: International Civil Aviation Organization

ICAO-TI: Technical Instructions by the "International Civil Aviation Organization" (ICAO)

GHS: Globally Harmonized System of Classification and Labelling of Chemicals

EINECS: European Inventory of Existing Commercial Chemical Substances

CAS: Chemical Abstracts Service (division of the American Chemical Society)

HMIS: Hazardous Materials Identification System (USA)

LC50: Lethal concentration, 50 percent

LD50: Lethal dose, 50 percent