



MATERIAL SAFETY DATA SHEET

according to the Hazard Communication Standard (29 CFR 1910.1200)

Revision Date 12/12/2012

Version 1.2

SECTION 1. Identification

Product identifier

Product number	818831
Millipore Ref.	8188319999 DIISOBUTYL KETONE FOR SYNTHESIS
Product name	Diisobutyl ketone for synthesis

Relevant identified uses of the substance or mixture and uses advised against

Identified uses	Use restricted under TSCA to research and development or as analytical reagent. Uses regulated under FDA or FIFRA are not affected. Chemical for synthesis
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Details of the supplier of the safety data sheet

Company	EMD Millipore Corporation 290 Concord Road, Billerica, MA 01821, United States of America SDS Phone Support: +1-978-715-1335 General Inquiries: +1-978-751-4321 Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)
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e-mail: mm_sds@merckgroup.com

Emergency telephone	800-424-9300 CHEMTREC (USA) +1-703-527-3887 CHEMTREC (International) 24 Hours/day; 7 Days/week
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SECTION 2. Hazards identification

GHS Classification

Flammable liquid, Category 3, H226
Specific target organ systemic toxicity - single exposure, Category 3, H335
For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

Hazard pictograms



Signal Word
Warning

MATERIAL SAFETY DATA SHEET

according to the Hazard Communication Standard (29 CFR 1910.1200)

Product number 818831
Product name Diisobutyl ketone for synthesis

Version 1.2

Hazard Statements

H226 Flammable liquid and vapor.
H335 May cause respiratory irritation.

Precautionary Statements

P210 Keep away from heat.
P262 Do not get in eyes, on skin, or on clothing.

OSHA Hazards

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Other hazards

None known.

The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity: 100 %

SECTION 3. Composition/information on ingredients

Formula	$(\text{CH}_3)_2\text{CHCH}_2\text{COCH}_2\text{CH}(\text{CH}_3)_2$	$\text{C}_9\text{H}_{18}\text{O}$ (Hill)
CAS-No.	108-83-8	
Molar mass	142.24 g/mol	

Hazardous ingredients

Chemical Name (Concentration)

CAS-No.

dimethyl heptanone (>= 90 % - <= 100 %)

SECTION 4. First aid measures

Description of first-aid measures

Inhalation

After inhalation: fresh air. If necessary, apply mouth-to-mouth breathing or artificial respiration. Keep respiratory tract clear. Get medical attention.

Skin contact

After skin contact: wash off with plenty of water. Remove contaminated clothing.

Eye contact

After eye contact: rinse out with plenty of water. Call in ophthalmologist.

Ingestion

After swallowing: make victim drink water (two glasses at most), avoid vomiting (risk of aspiration!). Pulmonary failure possible after aspiration of vomit. Do not give milk. No digestible oils. Laxative: Sodium sulfate (1 tablespoon/1/4 l water). Subsequently administer: activated charcoal (20 - 40 g in 10% slurry).

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

irritant effects, Cough, Shortness of breath, Dermatitis, Dizziness, inebriation, Nausea, Vomiting, Headache, CNS disorders, Lung edema

MATERIAL SAFETY DATA SHEET
according to the Hazard Communication Standard (29 CFR 1910.1200)

Product number 818831
Product name Diisobutyl ketone for synthesis

Version 1.2

Drying-out effect resulting in rough and chapped skin.

Indication of any immediate medical attention and special treatment needed

Instructions for the doctor: After swallowing of large amounts: Gastric lavage.

SECTION 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Carbon dioxide (CO₂), Foam, Dry powder

Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture

Combustible.

Forms explosive mixtures with air at elevated temperatures.

Vapors are heavier than air and may spread along floors.

Development of hazardous combustion gases or vapors possible in the event of fire.

Advice for firefighters

Special protective equipment for fire-fighters

In the event of fire, wear self-contained breathing apparatus.

Further information

Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid substance contact. Do not breathe vapors, aerosols. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

Environmental precautions

Do not empty into drains. Risk of explosion.

Methods and materials for containment and cleaning up

Cover drains. Collect, bind, and pump off spills.

Observe possible material restrictions (see sections 7 and 10).

Take up with liquid-absorbent material (e.g. Chemisorb®). Dispose of properly. Clean up affected area.

SECTION 7. Handling and storage

Precautions for safe handling

Observe label precautions.

Advice on protection against fire and explosion

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

MATERIAL SAFETY DATA SHEET
according to the Hazard Communication Standard (29 CFR 1910.1200)

Product number 818831
Product name Diisobutyl ketone for synthesis

Version 1.2

Conditions for safe storage, including any incompatibilities

Keep away from heat and sources of ignition. Keep container tightly closed in a dry and well-ventilated place.

Store at +15°C to +25°C (+59°F to +77°F).

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Contains no substances with occupational exposure limit values.

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Change contaminated clothing. Application of skin- protective barrier cream recommended.
Wash hands after working with substance.

Eye/face protection

Safety glasses

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Other protective equipment:

protective clothing

Respiratory protection

required when vapors/aerosols are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. Physical and chemical properties

Physical state	liquid
Color	colorless
Odor	unpleasant
Odor Threshold	0.111 ppm
pH	No information available.
Melting point	-42 °F (-41 °C)
Boiling point/boiling range	325 - 343 °F (163 - 173 °C) at 1,013 hPa

MATERIAL SAFETY DATA SHEET
according to the Hazard Communication Standard (29 CFR 1910.1200)

Version 1.2

Product number 818831
Product name Diisobutyl ketone for synthesis

Flash point	117 °F (47 °C)
Evaporation rate	No information available.
Flammability (solid, gas)	not applicable
Lower explosion limit	0.8 %(V)
Upper explosion limit	6.2 %(V)
Vapor pressure	1.6 hPa at 68 °F (20 °C) 9.8 hPa at 122 °F (50 °C)
Relative vapor density	No information available.
Relative density	0.81 g/cm ³ at 68 °F (20 °C)
Water solubility	0.5 g/l at 68 °F (20 °C)
Partition coefficient: n-octanol/water	log Pow: 2.56 (calculated) Bioaccumulation is not expected (log Pow <1). (Lit.)
Autoignition temperature	No information available.
Decomposition temperature	No information available.
Viscosity, dynamic	1.05 mPa.s at 68 °F (20 °C)
Explosive properties	Not classified as explosive.
Ignition temperature	653 °F (345 °C)

SECTION 10. Stability and reactivity

Reactivity

Explosible with air in a vaporous/gaseous state when heated.
Vapor/air-mixtures are explosive at intense warming.

Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

Possibility of hazardous reactions

Violent reactions possible with:

Oxidizing agents, fats, oils, strong reducing agents

MATERIAL SAFETY DATA SHEET
according to the Hazard Communication Standard (29 CFR 1910.1200)

Product number 818831
Product name Diisobutyl ketone for synthesis

Version 1.2

Conditions to avoid

Heating.

A range from approx. 15 Kelvin below the flash point is to be rated as critical.

Incompatible materials

Polyvinyl chloride, vinyl acetate

Hazardous decomposition products

no information available

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure

Inhalation, Eye contact, Skin contact

Target Organs

Eyes

Skin

Respiratory system

Central nervous system

Liver

Kidneys

Acute oral toxicity

LD50 rat: 5,750 mg/kg (RTECS)

Symptoms: Aspiration may cause pulmonary edema and pneumonitis.

Acute inhalation toxicity

LCLO rat: 11.8 mg/l; 4 h (RTECS)

Symptoms: mucosal irritations, Cough, Shortness of breath, Lung edema, Possible damages:, damage of respiratory tract

Acute dermal toxicity

LD50 rabbit: 16,000 mg/kg
(RTECS)

Skin irritation

rabbit

Result: slight irritation
(RTECS)

Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.

Eye irritation

rabbit

Result: slight irritation
(RTECS)

MATERIAL SAFETY DATA SHEET

according to the Hazard Communication Standard (29 CFR 1910.1200)

Product number
Product name

818831
Diisobutyl ketone for synthesis

Version 1.2

Genotoxicity in vitro

Ames test
Salmonella typhimurium
Result: negative
(Lit.)

Specific target organ systemic toxicity - single exposure

May cause respiratory irritation.

Specific target organ systemic toxicity - repeated exposure

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard

Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
ACGIH	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Further information

Systemic effects:

If inhaled

Nausea, Vomiting, Headache, Dizziness, inebriation, drop in blood pressure, CNS disorders

Absorption can result in damage to:

Liver, Kidney

Further data:

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information

Ecotoxicity

Toxicity to fish

LC50 fish: > 100 mg/l; 96 h (External MSDS)

Persistence and degradability

No information available.

Bioaccumulative potential

MATERIAL SAFETY DATA SHEET
according to the Hazard Communication Standard (29 CFR 1910.1200)

Product number 818831
Product name Diisobutyl ketone for synthesis

Version 1.2

Partition coefficient: n-octanol/water

log Pow: 2.56
(calculated)

Bioaccumulation is not expected (log Pow <1). (Lit.)

Mobility in soil

No information available.

Other adverse effects

Additional ecological information

Discharge into the environment must be avoided.

SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)

UN number	UN 1157
Proper shipping name	DIISOBUTYL KETONE
Class	3
Packing group	III
Environmentally hazardous	--

Air transport (IATA)

UN number	UN 1157
Proper shipping name	DIISOBUTYL KETONE
Class	3
Packing group	III
Environmentally hazardous	--
Special precautions for user	no

Sea transport (IMDG)

UN number	UN 1157
Proper shipping name	DIISOBUTYL KETONE
Class	3
Packing group	III
Environmentally hazardous	--
Special precautions for user	yes
EmS	F-E S-D

MATERIAL SAFETY DATA SHEET
according to the Hazard Communication Standard (29 CFR 1910.1200)

Product number 818831
Product name Diisobutyl ketone for synthesis

Version 1.2

SECTION 15. Regulatory information

United States of America

OSHA Hazards

Combustible Liquid
Moderate respiratory irritant
Target organ effects

This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS, and may deviate from the GHS information on the label and in section 2.

SARA 311/312 Hazards

Fire Hazard
Acute Health Hazard
Chronic Health Hazard

Clean Water Act

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.

This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.

US State Regulations

Massachusetts Right To Know

Remarks
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know

Ingredients
dimethyl heptanone

New Jersey Right To Know

Ingredients
dimethyl heptanone

California Prop 65 Components

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

Notification status

TSCA: Not Listed on TSCA inventory. For Research and Development Use only. Not For Manufacturing or Commercial Purposes.

DSL: This product contains one or several components that are not on the Canadian DSL nor NDSL.

SECTION 16. Other information

Training advice

Provide adequate information, instruction and training for operators.

MATERIAL SAFETY DATA SHEET
according to the Hazard Communication Standard (29 CFR 1910.1200)

Product number 818831
Product name Diisobutyl ketone for synthesis

Version 1.2

Full text of H-Statements referred to under sections 2 and 3.

H226 Flammable liquid and vapor.
H335 May cause respiratory irritation.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Revision Date 12/12/2012

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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