

Section 1. Product and Company Identification

Product Name Acetyl Acetone
CAS Number 123-54-6

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Section 2. Hazards Identification

Classification of the Substance or Mixture

Physicochemical Hazards

Flammable liquids: Category 3

Pyrophoric liquids: Out of category

Health Hazards

Acute toxicity - oral: Category 4

Acute toxicity - dermal: Category 3

Acute toxicity - inhalation (vapor): Category 3

Skin corrosion/irritation: Out of category

Serious eye damage/eye irritation: Out of category

Sensitization - skin: Out of category

Germ cell mutagenicity: Out of category

Specific target organ toxicity (single exposure): Category 3 (narcotic effect, respiratory tract irritation)

Specific target organ toxicity (repeated exposure): Category 2 (thymus, nervous system)

Environmental Hazards

Acute hazards to the aquatic environment: Category 3

Chronic hazards to the aquatic environment: Out of category

Other hazards than mentioned above are not applicable or no data available.

GHS Label Elements, Including Precautionary Statements

Pictograms:



Signal Word: DANGER

Hazard and Precautionary Statements

Hazard Statements

H335 May cause respiratory irritation
H336 May cause drowsiness and dizziness
H373 May cause damage to thymus, nervous system through prolonged or repeated exposure.
H226 Flammable liquid and vapor
H302 Harmful if swallowed
H311 Toxic in contact with skin
H331 Toxic if inhaled
H402 Harmful to aquatic life

Prevention/Precautionary Statements

Do not breathe mist, vapors and spray. (P260)
Keep away from heat, sparks, open flames and hot surfaces. - No smoking. (P210)
Keep container tightly closed. (P233)
Keep cool. (P235)
Ground or bond container and receiving equipment. (P240)
Use explosion-proof electrical, ventilating and lighting equipment. (P241)
Use only non-sparking tools. (P242)
Take precautionary measures against static discharge. (P243)
Avoid breathing mist, vapors and spray. (P261)
Wash hands thoroughly after handling. (P264)
Do not eat, drink or smoke when using this product. (P270)
Use only outdoors or in a well-ventilated area. (P271)
Avoid release to the environment. (P273)
Wear protective gloves, eye protection and face protection. (P280)
Wear protective gloves and protective clothing. (P280)

Response Precautionary Statements

Get medical advice and attention if you feel unwell. (P314)
Call a doctor if you feel unwell. (P301 +P312)
IF ON SKIN: Gently wash with plenty of soap and water. (P302+P352)
IF ON SKIN OR HAIR: Remove or take off immediately all contaminated clothing. Rinse skin with water or shower. (P303+P361 +P353)
IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. (P304+P340)
Call a doctor. (P311)
Call a doctor if you feel unwell. (P312)
Specific treatment. (P321)
Rinse mouth. (P330)
Remove or take off immediately all contaminated clothing. (P361)
Wash contaminated clothing before reuse. (P363)

In case of fire: Use appropriate media for extinction. (P370+P378)

Storage Precautionary Statements

Store in a well-ventilated place. Keep container tightly closed. (P403+P233)

Store in a well-ventilated place. Keep cool. (P403+P235)

Store locked up. (P405)

Disposal Precautionary Statements

Dispose of contents and container in accordance with local, regional and national regulations (to be specified). (P501)

Section 3. Composition / Information on Ingredients

Common Name	Acetyl Acetone
Synonym(s)	2,4-Pentanedione; ACAC
Formula	C ₅ H ₈ O ₂
CAS Number	123-54-6

COMPONENT	CAS NUMBER	CONCENTRATION
Acetyl Acetone	123-54-6	> 99%

Section 4. First Aid Measures

Inhalation: Move affected person to open air. Keep him or her at rest to allow easier breathing. Immediately call a doctor. Get medical treatment and advice.

Skin Contact: Wash the skin immediately. Take off or dispose of all contaminated clothing. Wash the skin with flowing water. Immediately call a doctor. Get medical treatment and advice.

Eye Contact: Wash eyes carefully for several minutes with water. Take off contact lenses if easily removed, and continue to wash eyes afterwards. Get medical treatment and advice.

Ingestion: Rinse mouth. DO NOT induce vomiting. Immediately call a doctor. Get medical treatment and advice.

Section 5. Firefighting Measures

Extinguishing Media

Small fire: Dry chemicals, dry sand, and alcohol-resistant foam extinguishing agents.

Large fire: Dry chemicals, alcohol-resistant foam extinguishing agents and water spray.

DO NOT USE DIRECT WATER JET - IT WILL CAUSE FROTHING AND SPREAD FIRE

Specific Hazards: Very flammable. Ignites easily with heat, sparks, and flare. Irritant, corrosive and/or toxic gas may be generated by a fire. Contaminated firefighting water or dilution water are corrosive and/or toxic and may cause damage to a firefighter.



Specific Fire Fighting: Do not put water into a container. Use extinguishing agent suitable for type of surrounding fire. Remove containers from the fire area if not dangerous. Extremely flammable; Use water spray for massive fire if extinguishers except for water spray are not effective.

Protection of Firefighters: In fire-extinguishing activity, wear an appropriate self-contained breathing apparatus and full protective clothing for chemicals.

Section 6. Accidental Release Measures

Personal Precautions, Protective Equipment and Emergency Procedures: Prohibit unauthorized entry into the area. Wear appropriate personal protective equipment (Refer to "Section 8- EXPOSURE CONTROLS /PERSONAL PROTECTION") and avoid inhalation or contact with eyes and skin. Isolate the site as a leak area by providing a zone that has an appropriate width to all directions. Leave from the low ground. Stay on the windward.

Environmental Precautions: Pay attention not to cause the influence on the environment by discharging into rivers.

Decontamination/ Absorption/Sweeping/Vacuuming/Neutralization: In case of small quantity, absorb the leakage with dry soil, sand, and incombustible-material or collect it into a container that can be covered tightly for later disposal.

In case of small quantity, use clean and anti-static tools to collect absorbed materials.

In case of large quantity, prevent the spills from spreading with embankment to lead them to a safe place for collection.

Methods and Equipment for Containment and Cleaning up: If not dangerous, stop the leak. All devices to handle spills must be grounded.

Small amount: Prevent the material from wetting by rain. Cover with dry soil, dry sand, or noncombustibles and store under a plastic sheet cover to avoid scattering and wetting.

Prevention Measures for Secondary Accidents: Removes all ignition sources promptly. (Prohibition of smoking, sparks, and flames in the surrounding area) Isolate flammables (such as wood, paper, and oil) from the leakage. Prevent flowing into drain, sewage, basement, and closed area.

Section 7. Handling and Storage

Technical Measures: Provide ventilation system and Use necessary personal protective equipment as described in "8. EXPOSURE CONTROLS AND PERSONAL PROTECTION."

Local and General Ventilation: Provide local ventilations and a full ventilation system as described in "8. EXPOSURE CONTROLS AND PERSONAL PROTECTION."

Precautions for Safe Handling: Do not handle until all safety precautions have been read and understood. Evacuate from the area due to the danger of explosion by a fire. Handle at a well-ventilated place. Avoid release to the environment. Do not let it contact eyes and the skin, or the clothes. Ventilate the exhaust to keep the concentration in the air below the exposure limit. Get the manual before use. Use properly by reading "Precautions for Use" labeled on the container before use or disposal. Wash hands thoroughly after handling. Prohibit the use of heat, sparks, and fire in the surrounding area. Do not touch, inhale, or swallow. Use at the cool place where can maintain the appropriate temperature. Do not breathe dust and fume. Do not handle containers with such



manners as tumbling down, falling, impacting, and dragging.

Storage Precautionary Statements

Technical Measures: The storage facility should be provided with necessary lighting, lighting equipment, and ventilator to store and handle dangerous goods. The storage floor should have penetration-proof construction against dangerous goods and be inclined adequately. A proper sump should be provided to catch any spills. The roof of a storage facility should be made of a non-combustible material and use metals or other lightweight non-combustible materials. No ceiling should be installed. The storage facility should be designed with fireproof construction and beams should use a noncombustible material.

Incompatible Substances or Mixtures: Refer to "10. STABILITY AND REACTIVITY"

Storage Conditions: Store away from incompatible materials. Store locked up. Have containers keep away from direct sunlight and heat. Store in a well-ventilated and cool place keeping container tightly closed.

Material Used in Packaging/Containers: Use containers prescribed in the "Fire Service Law (Japan)" and the "UN Transport Regulations."

Section 8. Exposure Controls / Personal Protection

Engineering Controls: A workplace to store or handle this substance should be provided with an eye washing station and an emergency shower station. Use a closed system, local ventilation, and other engineering controls for the process. If mist generates in the high-temperature process, install ventilation system to keep the concentration of air pollutant lower than the control limit and the exposure limit. Take preventive measures for electrostatic discharge. Use explosion-proof electrical equipment, ventilation, and lighting equipment. Install the local ventilation equipment with explosion-proof spec.

Containers and receptors should be grounded and coupled.

Personal Protective Equipment

Respiratory Protection: Wear an adequate protective apparatus for respiratory organs.

Hand Protection: Wear adequate personal protective gloves.

Eye Protection: Goggles (ordinary glass type, ordinary glass type with side shields, and goggle type)

Skin and Body Protection: Wear the adequate personal protective clothing and face protection equipment.

Specific Hygiene: Wash hands thoroughly after handling.

Section 9. Physical and Chemical Properties

Physical State: Liquid

Color: Clear

Odor: Slight odor

pH: No data available

Melting Point/Freezing Point: -23°C

Initial Boiling Point and Boiling Ranges: 139.5°C

Flash Point: 38.5°C

Auto-Ignition Temperature: 340°C
Flammability or Explosive Limits: 2.4 - 11.6%
Vapor Pressure: 7.9hPa (20°C), 21.8hPa (38°C), 40.4hPa (50°C)
Vapor Density: 3.45 (air=1)
Specific Gravity (Density): 0.97 (20°C)
Solubility: Water solubility; 153.8 - 155.2 g/L (20°C, pH 3.79 - 3.89)
Partition Coefficient (n-Octanol/Water): log K_{ow} = 0.4

Section 10. Stability and Reactivity

Stability: Stable under ordinary conditions of use and storage.
Possibility of Hazardous Reaction: Reacts with strong oxidizers, strong alkalis, acid. Contact with heat, fire and incompatibles may result in hazardous reactions..
Conditions to Avoid/Incompatible Substances or Mixtures: Strong oxidizers, strong alkalis, strong acid.
Hazardous Decomposition Products: Burning may produce toxic gases (carbon dioxide and carbon monoxide and so on).

Section 11. Toxicological Information

Acute Toxicity

Oral: Category 4; From the results of rat LD50 (760, 1050, 890, 1410, 970 (male), 570 (female), 800, 1000, 55 mg/kg bw) (SIDS (Access on June, 2008), PATTY (5th, 2001)).

Dermal: Category 3; From the results of rabbit LD50 (1370 (male), 790 (female), 4870mg/kg bw) (SIDS (Access on June, 2008)).

Inhalation (vapor): Category 3; From the results of Rat LC50 =1224 ppm/ 4hr, Rat LC50=5.1 mg/L/ 4hr.

Skin Corrosion/Irritation: Out of category; since there are descriptions that mild erythema and mild to moderate edema were observed in Draize test (Rabbit, 4hr). And the mean scores of erythema or edema are documented for the 24, 48 and 72 observation times are less than 1.5 at all. These symptoms recovered except for mild desquamation after 7 days (SIDS (2003)).

Serious Eye Damage/Irritation: Out of category; since there were no corneal opacity, and mild conjunctival redness, mild to moderate chemosis and secretion, mild iritis were observed in Draize test using rabbit. These symptoms all recovered after 24-hour (SIDS (Access on June, 2008)).

Respiratory or Skin Sensitization: LLNA method (TG429); negative.

Germ Cell Mutagenicity: It carried out the outside of Category because there are negative results from the in vivo mutagenicity tests using somatic cells: (micronucleus test by inhalation exposure using mouse-bone marrow cells, micronucleus test by intraperitoneal or inhalation exposure using rat bone marrow cells, chromosome aberration test using mouse and rat-bone marrow cells) and the in vivo mutagenicity tests using germ cells: (chromosome aberration test using mousespermatogonia) (SIDS(Access on June, 2008). In addition, in dominant lethal test using mice, minor effects were observed, which is believed due to extremely low values of the control group. And in vivo mutagenicity tests has the following descriptions. Ames tests (Salmonella T A 1 04); slightly positive, Mutation assay using CHO cell; negative, chromosome aberration test in presence of S9; positive



(both SIDS(Access on June, 2008)).

STOT -Single Exposure: It was classified into Category 3(narcotic effect) based on descriptions that tremor, unsteady gait, coma, anesthesia etc. were observed by oral exposure at doses up to about LD50 from 485 mg/kg in rat, and tremor, ataxia, decreased motility, loss of reflexes of the tail knob and decrease of righting reflex etc. were observed by inhalation exposure at doses up to about LC50 from 2,619 mg/L in rat (SIDS(Access on June, 2008)). In addition, there are descriptions that anesthesia, coma etc. were observed by dermal exposure at doses of 790-1370mg/kg in rabbit (SIDS(Access on June, 2008)), and dizziness, loss of consciousness etc. were observed by inhalation exposure in human (SIDS(Access on June, 2008)). From descriptions that forced breathing, lacrimation, crusting around the eyes and nose were observed by inhalation exposure in rat (SIDS(Access on June, 2008)), and irritating to respiratory tract in humans (HSDB(2007)). So it was set as Category 3(respiratory tract irritation).

STOT -Repeated Exposure: There are descriptions that develop of general symptoms of death, difficulty breathing, tremors, ataxia, etc., further, necrosis of the thymus, mesenteric adenitis were observed at 500mg/kg/day or it higher dose in 2-week (10 to 11times) repeated oral exposure test using rats. Similar findings were reported at higher doses in the rat inhalation or dermal exposure test. In addition, develop of general symptoms in oral exposure of two weeks is considered to impact on the nervous system, because there is the description of the neurodegenerative brain and degeneration of the thymus lymphocytes as histopathological changes. Since 500mg/kg/ day (90 days equivalent: 76.9mg/kg/day) is in the range of the guidance value of Category 2, and observation of degeneration of the thymus lymphocytes, we classified into Category 2 (nervous system, thymus).

Section 12. Ecological Information

Hazardous to Aquatic Environment - Acute Hazard: It was classified into Category 3 from 48-hour EC50=34.4 mg/L of Crustacea (Daphnia magna) (SIDS, 2001).

Hazardous to Aquatic Environment - Chronic Hazard: Out of category, since acute toxicity was Category 3 and rapidly degrading (BOD: 83% (existing chemical safety inspections data, 1991)), and less bio-accumulative (log Kow = 0.4((SRC, 2005)).

Ecotoxicity

Fish/Other Toxicity: Lepomis macrochirus LC50 (96hr) =60.1 mg/L; Daphnia magna EC50 (48hr) = 34.4mg/L

Degradability: Biodegradable

Bioaccumulative Potential: Supposed less bio-accumulative (log Kow=0.4)

Section 13. Disposal Considerations

Waste Treatment Methods: Dispose of product and contaminated packaging in accordance with all local, state, and federal environmental control regulations.



Section 14. Transport Information

International Regulations:

Regulatory Information by Sea: Conform to the provisions of IMO.

UN Number: UN2310

Proper Shipping Name: Pentane-2,4-Dione

Primary Hazard Class: 3

Subsidiary Risk: 6.1

Packing Group: III

Marine Pollutant: Not Applicable

Regulatory information by Air: Conforms to the provisions of ICAO/IATA

UN Number: UN2310

Proper Shipping Name: Pentane-2,4-Dione

Primary Hazard Class: 3

Subsidiary Risk: 6.1

Packing Group: III

Emergency Response Guide Number: 131

Section 15. Regulatory Information

HCS Classification

CLASS: Highly toxic.

CLASS: Irritating substance.

CLASS: Combustible liquid having a flash point between 37.8°C (100°F) and 93.3°C (200°F).

U.S. Federal Regulations

TSCA 5(a)2 proposed significant rules: Acetyl Acetone

TSCA 8(b) inventory: Acetyl Acetone

TSCA 12(b) annual export notification: Acetyl Acetone

SARA 302/304/311/312 extremely hazardous substances: No products were found.

SARA 302/304 emergency planning and notification: No products were found.

SARA 302/304/311/312 hazardous chemicals: No products were found.

SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Acetyl Acetone: fire, immediate health hazard

SARA 313 toxic chemical notification and release reporting: No products were found.

Clean Water Act (CWA) 307: No products were found.

Clean Water Act (CWA) 311: No products were found.

Clean air act (CAA) 112 accidental release prevention: No products were found.

Clean air act (CAA) 112 regulated flammable substances: No products were found.

Clean air act (CAA) 112 regulated toxic substances: No products were found.

International Regulations

204-634-0 EINECS

DSCL (EEC): R10- Flammable.

R22- Harmful if swallowed.

International Lists: Not available.



State Regulations

California prop. 65: No products were found.

Section 16. Other Information

Disclaimer: 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.

