

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Product name: ACETONE

Other names: 2-Propanone; dimethyl ketone; dimethyl ketal.
Huntsman Product Codes: 201108, 201181, 201205, 201213, 201221, 201238, 201262, 201287, 201295, 201343, 201368, 201384.

Chemical Family: Aliphatic ketone

Molecular Formula: C₃H₆O

Recommended use: Industrial solvent and chemical intermediate; may be re-packed for sale to the public as a solvent.

Manufacturer /Supplier: Huntsman Chemical Company Australia Pty Limited

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2. HAZARDS IDENTIFICATION

Health Hazard classification

This material is classified as hazardous according to the health criteria of NOHSC Australia.

Hazard category

Xi Irritant

Risk phrase(s)

R11 Highly flammable
R36 Irritating to eyes.
R66 Repeated exposure may cause skin dryness or cracking.
R67 Vapours may cause drowsiness and dizziness.

Safety phrase(s)

S2 Keep out of reach of children.
S9 Keep container in a well ventilated place.
S16 Keep away from sources of ignition-No Smoking.
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

Note: European Commission Risk (R) & Safety (S) phrases relating to physico-chemical properties are provided for information only.

Material Safety Data Sheet



Dangerous Goods classification

Classified as Dangerous Goods by the criteria of the Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code).

Class 3 Flammable Liquid

Poisons schedule (Aust): 5

3. COMPOSITION/INFORMATION ON INGREDIENTS

CHEMICAL ENTITY	CAS NO.	PROPORTION (%weight/weight)
Acetone	67-64-1	99.5
Water	7732-18-5	0.5

4. FIRST AID MEASURES

For advice, contact Poisons Information centre (Phone Australia 13 1126) or a doctor.

Ingestion:

If swallowed, do NOT induce vomiting. If patient is conscious, give a glass of water. Lean patient's head forward to reduce the risk of aspiration (sucking of vomitus into the lungs). Seek immediate medical assistance. Transport to a doctor or hospital.

Eye contact:

If in eyes, hold eyelids apart and flush the eye continuously with running water. Continue flushing until advised to stop by the Poisons Information Centre or a doctor, or for at least 15 minutes.

Skin contact:

If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.

Inhalation:

If inhaled, remove to fresh air. Seek medical assistance. If not breathing give artificial respiration. If breathing difficult give oxygen.

First aid facilities:

Provide eye baths and safety showers close to areas where there is potential for eye and skin contact.

Medical attention and Special Treatment:

Treat symptomatically. There is a possibility of aspiration into the lungs and chemical pneumonitis if swallowing and vomiting occurs.

5. FIRE-FIGHTING MEASURES

Highly flammable liquid. Vapour may form an explosive mixture with air.

Suitable extinguishing media:

"Alcohol" foam, dry chemical and carbon dioxide.

Hazards from combustion products:

Combustion products may include carbon monoxide and carbon dioxide.

Precautions for fire fighters and special protective equipment:

Fire-fighters and others exposed to the products of combustion should wear self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

There is a possibility of pressure build-up in closed containers leading to violent rupture of containers when heated. Use water spray to cool exposed closed containers. Vapours are heavier than air and can accumulate at ground level; vapours may travel a considerable distance to source and flash back. Dilute aqueous solutions can produce flammable vapours.

Hazchem code: 2[Y]E

6. ACCIDENTAL RELEASE MEASURES

Emergency procedures:

Keep unprotected people away. Wear appropriate protective equipment/clothing to prevent eye and skin contact and inhalation of vapours and/or mist (see Section 8 - Personal Protection). Remove all ignition sources. Increase ventilation. Use water spray to disperse vapours. For large spills, wear self-contained breathing apparatus and full protective clothing.

Methods and materials for containment and clean up procedures:

Contain and absorb spill with water-dampened absorbent such as sand, earth, vermiculite or other inert absorbent and seal in properly labelled drums for disposal. Alternatively, pump to salvage tank using an air-operated or other non-spark producing pump. Keep out of sewer, stormwater drains and waterways.

7. HANDLING AND STORAGE

Precautions for safe handling:

Highly flammable liquid. Vapour may form explosive mixtures with air. Avoid all ignition sources-No smoking. Use only in well ventilated areas. Flameproof equipment necessary in area where product is being used. Earth (ground) and bond shipping container, transfer line transfer and receiving vessel. Use non sparking tools. Consult AS1940 for further information on the storage and handling of flammable liquids. Handle in accordance with State and Territory regulations for Dangerous Goods.

Avoid contact with skin, eyes and clothing. Use only in well ventilated areas. Wash thoroughly after handling. When using, do not eat, smoke or drink.

Conditions for safe storage:

Keep away from sources of ignition-No smoking. Keep container tightly closed. Store in a cool, well ventilated area. Store away from strong oxidising agents, strong alkalis, strong mineral acids and bromine. Many plastics may be unsuitable as storage and handling materials. Store in accordance with State and Territory regulations for Dangerous Goods.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

National exposure standards:
As published by NOHSC Australia.

	8-hr TWA		STEL (15 min's)		Peak Limitation		Carcinogen Category	Notices
	ppm	mg/m ³	ppm	mg/m ³	ppm	mg/m ³		
Acetone	500	1185	1000	2375	-	-	-	-

Keep exposures as low as practicable below the exposure standards.

Biological limit values
None established by NOHSC.

Engineering controls:
Provide sufficient ventilation to control exposure levels below the exposure standards. Use local exhaust ventilation at sources of air contamination such as open process equipment. Lethal concentrations may exist in areas with poor ventilation, such as confined spaces.

Personal protective equipment:
Avoid breathing vapours and/or mist. If inhalation risk exists, wear respiratory protection equipment meeting AS/NZS1716 in accordance with AS/NZS1715. For low vapour concentrations, an air-purifying respirator fitted with a Type AX filter may be suitable. Air-purifying respirators do not provide protection in oxygen-deficient atmospheres. Consult respirator supplier. High or unknown airborne concentrations and/or confined spaces may require the use of self-contained breathing apparatus or supplied air respirator.

Wear impervious gloves. Glove supplier data indicates that rubber gloves should be suitable for short-term contact.

Wear chemical splash goggles where there is potential for eye contact.

Wear industrial trousers and long-sleeved shirt and safety boots.

Protective equipment/clothing should meet, and be selected and used in accordance with, the relevant Australian Standards. Consult protective equipment/clothing supplier for appropriate equipment/clothing for a given application. Protective equipment and clothing should be decontaminated before storage and/or reuse.

9. PHYSICAL AND CHEMICAL PROPERTIES

Form / colour / odour: Clear, colourless, mobile liquid, with characteristic pungent sweetish odour.

pH: Not App

Vapour Pressure (20°C): 180 mm Hg

Rel Vapour Density (air=1): 2.0

Boiling Point (°C): 56

Melting Point (°C): -94

Solubility in water: Completely miscible

Specific Gravity (°C): 0.791 @ 20°C

Flash Point (°C): -17 (Tag Closed Cup)

Flammability Limits (%): 2.15-13% by vol.

Autoignition Temp (°C): 465

Evaporation Rate (n-Butyl acetate=1): 6

Octanol/water partition coefficient: -0.24

Decomp. Point (°C): N App

Viscosity (25°C): 0.303 cps

Percent Volatiles: 100

Molecular Weight: 58.08

Solubility in organic solvents: Miscible with alcohols, dimethyl formamide, chloroform, ether and most oils.

Odour Threshold: 100-140 ppm

(Typical values only - consult specification sheet)

N Av = Not available N App = Not applicable

10. STABILITY AND REACTIVITY

Chemical stability:

The product is stable under the normal conditions of storage and transport.

Conditions to avoid:

Keep away from sources of ignition - No smoking.

Incompatible materials:

Keep away from strong oxidising agents, strong alkalis and strong mineral acids and bromine. Many plastics may be unsuitable as storage and handling materials.

Hazardous decomposition products:

Thermal decomposition products may include carbon monoxide and carbon dioxide.

Hazardous reactions:

Will not polymerise.

11. TOXICOLOGICAL INFORMATION

No adverse health effects expected if the product is handled in accordance with this Safety Data Sheet and the product label. Symptoms that may arise if the product is mishandled are:

Acute Effects

Ingestion:

Low toxicity by swallowing. The material may cause irritation to the throat and the oesophagus (tube connecting throat to stomach). Swallowing of a large amount may cause symptoms similar to inhalation (headache, drowsiness, dizziness, poor coordination, nausea and loss of consciousness).

Eye contact:

Liquid may cause moderate to severe eye irritation and corneal damage. Most subjects exposed to vapour concentrations of 500-1000 ppm experienced irritation to the eyes.

Skin contact:

Brief contact may cause mild irritation. Prolonged or repeated exposure may cause defatting resulting in dryness or cracking of the skin (irritant contact dermatitis). Due to its low toxicity and high volatility, acetone is unlikely to be absorbed through the skin in harmful amounts unless evaporation is prevented.

Inhalation:

Vapour concentrations about 500 ppm are irritating to the nose and throat. High vapour concentrations (generally above 1000 ppm) have resulted in narcotic-like effects including headaches, drowsiness, dizziness, loss of coordination, nausea, loss of appetite, and possibly, loss of consciousness.

Chronic Effects

Repeated or prolonged skin contact with the liquid may cause irritant contact dermatitis.

A study of 800 workers occupationally exposed to acetone vapours (600-2150 ppm) over an 18 year period revealed no significant adverse health effects in exposed compared with unexposed workers.

Other Health Effects Information

Three (3) out of 4 females exposed to 1000 ppm acetone vapour 7.5 hours a day for 4 days were reported to suffer menstrual irregularities.

Exposure to acetone potentiates (enhances) the liver and kidney toxicity of chlorinated hydrocarbon solvents such as chloroform, carbon tetrachloride, 1,1-dichloroethylene and 1,1,2-trichloroethane.

Fasting and diabetes increases the normal levels of acetone in the body. Dieters and diabetics may have a higher body burden and additional exposure to high levels of acetone may place them at more risk.

Poorly controlled diabetes and starvation during pregnancy can result in metabolic ketosis (a condition characterised by elevated ketone levels in body tissues and fluids), which can have a harmful effect on the foetus and mother. Exposure to relatively high levels of acetone can result in elevated blood ketones which may mimic such a ketosis. While no human cases of acetone induced ketosis adversely affecting pregnancy have been reported, care should be taken.

Exposure to high concentrations of acetone may aggravate pre-existing skin, respiratory, blood, liver, kidney and reproductive disorders in humans.

Toxicological Information

Oral LD50 (Rat):	5.8-8.4 g/kg, Practically non toxic
Dermal LD50 (Rabbit):	20 g/kg, Practically non toxic
Eye Irritation (Rabbit):	25-50 on a scale of 110, Moderately irritating
Skin Irritation (Rabbit):	0.5-3.0 on a scale of 8.0, Slightly irritating
Inhalation LC50 (Rat):	32000 ppm for 4 hours.

Rats exposed to 19000 ppm of acetone 3 hr/day, 5 days/week for 8 weeks showed a reversible decrease in absolute brain weight. No consistent changes in other organs or evidence of other toxic effects was found.

Exposure of pregnant rats to 0, 2200 and 11000 ppm acetone vapour and pregnant mice to 0, 2200 and 6600 ppm during gestation did not result in a teratogenic response. There was evidence of both maternal toxicity and slight developmental toxicity at the highest concentration for each species.

In a 90-day gavage study of rats, mild increases in blood parameters were observed at dose levels greater than 500 mg/kg/day. In a 13-week drinking water study, increased organ weights, altered blood parameters and mild liver damage were observed in the male rats exposed to concentrations of 25 g/L (1700 mg/kg/day). Administration of 50 g/L (3400 mg/kg/day) acetone in drinking water for 13 weeks showed testicular effects and changes in sperm quality in male rats. In female rats at the highest concentration, 50 g/L (3100 mg/kg/day), increases in organ weight and altered blood parameters were observed.

Acetone has been used extensively as a solvent vehicle in skin cancer studies and is not considered carcinogenic when applied to the skin.

Acetone has tested mainly negative for genetic toxicity in numerous non mammalian systems, as well as *in vitro* and *in vivo* mammalian systems. Acetone is not considered to be mutagenic or genotoxic.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Aquatic Toxicity:

Fish Toxicity (rainbow trout, goldfish, bluegill): LC50(96 hr): 5000-13000 mg/L

Daphnia Magna EC50 (24 hr): >10,000 mg/L

Daphnia Magna EC50 (48 hr): 13500 mg/L

Blue-green Algae: Toxicity Threshold (7-8 days): 530 mg/L

Green Algae: Toxicity Threshold (7-8 days): 7500 mg/L

Persistence/degradability

When released to the atmosphere, acetone will degrade mainly by photooxidation and, to a less extent by reaction with hydroxy radicals. The half-life of the reaction with hydroxy radicals is approximately one month. Acetone is considered to have very low "photochemical ozone creation potential" (POCP). Acetone can be removed from the air by rainfall but this does not appear to be the most significant route most of the time.

Acetone is classified as "readily biodegradable" (BOD OECD Test 301D: 68%, 72% and 78% after 5, 15 and 28 days, respectively).

Acetone at a concentration of 500 mg/L was toxic to microorganisms when biooxidation of activated sludge was attempted.

If released to natural water, acetone will dissolve and volatilise at a slow, but significant, rate depending on the ambient conditions (Henry law Constant: 0.0000426 atm-m³/mol at 25 deg.C). Biodegradation will also occur in surface water.

In soil, acetone will evaporate and leach readily in most types of soil. Concurrent biodegradation may diminish the general significance of leaching if biodegradation occurs fast enough.

Acetone has a negligible tendency to bioaccumulate (Octanol/Water Partition Coefficient Log K_{ow}: -0.24).

Mobility

See "Persistence/degradability" section.

13. DISPOSAL CONSIDERATIONS

Disposal methods:

The material is considered to be a hazardous waste because of its characteristic of ignitability. If feasible, recycle. Otherwise, dispose of by burning in an approved incinerator. Take care in igniting as acetone is highly flammable. In all cases, disposal should be in accordance with regulations.

Special precautions for landfill or incineration:

Emptied containers retain vapour and product residue and may therefore present explosive vapour and irritant vapour hazards. Observe all safeguards on label and in this MSDS until container is cleaned, reconditioned or destroyed. **DO NOT CUT OR WELD ON OR NEAR THIS CONTAINER.** In all cases, disposal should be in accordance with regulations.

14. TRANSPORT INFORMATION

Road and Rail Transport (ADG Code)

UN Number 1090
 Proper Shipping Name: ACETONE
 Dangerous Goods Class: 3
 Subsidiary Risk: None allocated
 Packing Group: II
 Hazchem Code: 2[Y]E
 Emergency Information: IER Guide 14

Marine Transport (IMDG Code)

UN Number 1090
 Proper Shipping Name: ACETONE
 Dangerous Goods Class: 3.2
 Subsidiary Risk: None allocated
 Packing Group: II

Air Transport (IATA Regulations)

UN Number 1090
 Proper Shipping Name: ACETONE
 Dangerous Goods Class: 3
 Subsidiary Risk: None allocated
 Packing Group: II

Dangerous Goods Segregation (ADG Code):

Do not load and pack with Class 1 (Explosives), Class 2.1 (Flammable Gases - where flammable liquids/gases are in bulk), Class 2.3 (Toxic Gases), Class 4.2 (Spontaneously Combustible Substances), Class 5.1 (Oxidising Agents), Class 5.2 (Organic Peroxides), Class 7 (Radioactive Substances). Transport in accordance with State and Territory regulations for Dangerous Goods.

15. REGULATORY INFORMATION

Country/Region	Inventory	Status
Australia	AICS	Listed

Poisons schedule: 5

16. OTHER INFORMATION

Note: Acetone is classified as R36 in solid or liquid mixtures at concentrations equal to or greater than 20% w/w [NOHSC: 1008 (2003), Table 8]. Huntsman have notified NOHSC of the hazardous substance classification (June 2000).

Reason(s) for Issue: Change to NOHSC 16-part format.

Abbreviations:

AICS:	Australian Inventory of Chemical Substances
IERG:	Initial Emergency Response Guide (SAA/NZS HB: 76)
IMDG Code:	International Maritime Dangerous Goods Code
IATA Regulations:	International Air Transport Association Regulations
NOHSC:	National Occupational Health and Safety Commission Australia

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