

# **HUNTSMAN**

## **MATERIAL SAFETY DATA SHEET**

### **ACETONE**

**Hazardous according to the criteria of NOHSC**

#### **COMPANY DETAILS**

**Company Name:** Huntsman Chemical Company Australia Pty. Limited A.C.N. 004 146 338  
**Address:** Somerville Road, West Footscray VIC 3012  
**Telephone Number:** (03) 9316 3333  
**Fax Number:** (03) 9314 2170  
**Emergency Telephone Number:** 1800 033051 (STD Free - all hours)

#### **IDENTIFICATION**

**Product Name:** ACETONE

**Other Names:** 2-Propanone; dimethyl ketone; dimethyl ketal.  
**Chemical Family:** Aliphatic ketone  
**Molecular Formula:** C<sub>3</sub>H<sub>6</sub>O

**Manufacturer's Product Codes:** 201108, 201181, 201205, 201213, 201221, 201238, 201262, 201287, 201295, 201343, 201368, 201384.

**ADG Code Classification**

**UN No.** 1090  
**Proper Shipping Name:** ACETONE  
**Dangerous Goods Class:** 3 (Flammable Liquid)  
**Subsidiary Risk:** None allocated  
**Packing Group:** II  
**Hazchem Code:** 2[Y]E  
**Emergency Information:** IER Guide 14 (SAA/SNZ HB:76) or EPG 3A1 (AS2931)

**Poisons Schedule Number:** 5  
**Australian Inventory of Chemical Substances:** Listed

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

#### **PHYSICAL DESCRIPTION/PROPERTIES**

**Appearance:** Colourless mobile liquid, with characteristic pungent sweetish odour.

**Boiling Point:** 56 deg.C @ 760 mm Hg  
**Melting Point:** -94 deg.C  
**Vapour Pressure:** 180 mm Hg @ 20 deg.C  
**Specific Gravity:** 0.791 @ 20 deg.C (H<sub>2</sub>O = 1)  
**Flash Point:** -17 deg.C Method: Tag closed cup  
**Flammability Limits:** 2.15-13% by volume in air.  
**Solubility in Water:** Completely miscible.

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#### **OTHER PROPERTIES**

**Evaporation Rate:** 6 (n-butyl acetate = 1)  
**Vapour Density:** 2.0 (air = 1)  
**Solubility in Organic Solvents:** Completely miscible with alcohol, dimethyl formamide, chloroform and ether and most oils.  
**Auto-ignition Temperature:** 465 deg.C  
**Viscosity:** 0.303 cP @ 25 deg.C  
**Percent Volatiles:** 100  
**Odour Threshold:** 100-140 ppm  
**Molecular Weight:** 58.08

#### **INGREDIENTS**

<b>Chemical Name</b>	<b>CAS No.</b>	<b>Proportion, % wt.</b>
Acetone	67-64-1	99.5
Water	7732-18-5	0.5

Note: Ingredient proportions are typical values only and should not construed as guaranteed analysis of any particular batch or specification.

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#### **HEALTH HAZARD INFORMATION**

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##### **HEALTH EFFECTS**

###### **Acute - Swallowed:**

Considered slightly toxic if swallowed. The material may cause irritation to the throat and the oesophagus (tube connecting throat to stomach). Swallowing a large amount may cause symptoms similar to inhalation (ie. headache, dizziness, poor co-ordination, nausea, vomiting and loss of consciousness).

###### **Acute - Eye:**

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.

###### **Acute - Skin:**

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 its low toxicity and high volatility, acetone is unlikely to be absorbed through the skin in harmful amounts unless evaporation is prevented.

###### **Acute - Inhaled:**

Vapour concentrations above about 500 ppm are irritating to the nose and throat. High vapour concentrations (generally above 10000 ppm) have resulted in narcotic-like effects including headaches, dizziness, loss of co-ordination, nausea, loss of appetite and possibly loss of consciousness.

###### **Chronic:**

Repeated or prolonged contact may cause irritant contact dermatitis.

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

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#### **Other Health Effects Information:**

Three (3) out of 4 females exposed to 1000 ppm 7.5 hours/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 more at risk.

Poorly controlled diabetes and starvation during pregnancy can result in metabolic ketosis (a condition characterised by elevated ketone levels in the 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 eye, skin, respiratory, blood, liver, kidney and reproductive disorders in humans.

#### **FIRST AID**

##### **Swallowed:**

If swallowed, do NOT induce vomiting. Give a glass of water. Transport to a doctor or hospital quickly. For further advice call Poisons Information Centre.

##### **Eye:**

Immediately flush with plenty of water for at least 15 minutes, with eyelids held open. Seek immediate medical advice.

##### **Skin:**

Immediately flush with plenty of water. Remove contaminated clothing. Wash clothing before reuse.

##### **Inhaled:**

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

##### **First Aid Facilities:**

Provide eye baths and safety showers close to areas where splashing may occur.

#### **ADVICE TO DOCTOR**

Aspiration of this product during induced vomiting may result in lung injury.

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#### **PRECAUTIONS FOR USE**

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#### **EXPOSURE STANDARDS**

	<u>8 HR TWA</u>	<u>STEL (15 MIN'S)</u>	<u>PEAK LIMITATION</u>
Acetone	500 ppm	1000 ppm	-

As published by the National Occupational Health and Safety Commission (NOHSC).

Keep exposures as low as practicable below exposure standards.

#### **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 PROTECTION**

##### **Respiratory Protection:**

Avoid breathing vapour and/or mist. If inhalation risk exists, wear respiratory protection equipment meeting AS/NZS1716 in accordance of AS/NZS1715. For low airborne vapour concentrations, a full-face air-purifying respirator fitted with a vapour filter for low boiling organic compounds may be suitable. Air-purifying respirators do not provide protection in oxygen-deficient atmospheres. High airborne concentrations may require the use of self-contained breathing apparatus or supplied air respirator. Consult respiratory protection equipment supplier (see "Other Personal Protection").

##### **Glove Type:**

Wear impervious gloves (eg. rubber gloves).

##### **Eye Protection:**

Wear chemical splash goggles.

##### **Clothing:**

For brief exposure, no precautions other than clean body-covering clothing should be needed.

##### **Other Personal Protection Information:**

Protective clothing/equipment should meet, and be selected and used in accordance with, relevant Australia Standards. Consult protective equipment supplier for appropriate clothing/equipment for a given application. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. When using, do not eat, drink or smoke. Protective equipment and clothing should be decontaminated before storage and/or reuse.

#### **FLAMMABILITY**

Highly flammable liquid. Vapour may form explosive mixtures with air. Avoid all ignition sources. Use only in well ventilated areas. Flameproof equipment necessary in area where product is being used. Earth (ground) and bond shipping container, transfer line and receiving container. Consult AS1940 for further information on the storage and handling of flammable liquids. Handle in accordance with State or Territory regulations for flammable liquids.

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#### **SAFE HANDLING INFORMATION**

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##### **STORAGE AND TRANSPORT**

Australian Code for the Transport of Dangerous Goods by Road and Rail (ADG Code):

Classified for classification as a Dangerous Good (See "Identification" section for classification). Do not load or pack with Class 1 (Explosives), Class 2.1 (Flammable Gases - where flammable liquids/gases are in bulk), Class 2.3 (Poisonous 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 regulations.

##### **International Maritime Dangerous Goods (IMDG) Code:**

UN No. 1090, ACETONE, Class 3.2, Packing Group II.

##### **International Air Transport Association (IATA) Dangerous Goods Regulations:**

UN No. 1090, ACETONE, Class 3, Packing Group II.

##### **Other Transport and Storage Information:**

Classified as a Dangerous Good for storage and handling. (See "Identification" section for classification). Store and handle in accordance with State and Territory regulations (See "Flammability" section).

The material is a Schedule 5 Poison (Australia) and a Fourth Schedule Toxic Substance (New Zealand) and must be stored, maintained and used in accordance with relevant regulations.

Stable under normal storage and handling conditions. Keep away from sources of ignition - No smoking. Keep container tightly closed. Store in a cool well ventilated area. Take precautionary measures against static discharges. Keep away from strong oxidising agents, strong alkalis, strong mineral acids and bromine. Many plastics may be unsuitable as storage and handling materials.

##### **SPILLS AND DISPOSAL**

##### **Spill or Leak Procedures:**

Keep unprotected people away. Wear self-contained breathing apparatus. Shut off leak if possible to do so without danger. Remove all ignition sources. Increase ventilation. Use water spray to disperse vapours. Contain and absorb spill with water dampened absorbent such as sand, earth or vermiculite and seal in properly labelled drums for disposal. Alternatively, pump to salvage tank using air-operated or other non-spark-producing pump. Keep out of sewer, stormwater drains and waterways.

##### **Waste Disposal:**

The product 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.

##### **Containers:**

Emptied containers retain vapour and product residue and may therefore present explosive and irritant vapour hazards. Drain containers and allow to dry with ventilation to remove liquid and vapour. 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.

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#### **FIRE/EXPLOSION HAZARD**

Highly flammable liquid. Vapours may form explosive mixtures with air.

#### **Extinguishing Media:**

"Alcohol" foam, carbon dioxide and dry chemical extinguishers may be used.

#### **Special Fire-Fighting Procedures:**

Fire-fighters and others exposed to the products of combustion (see "Hazardous Decomposition Products") should wear self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

#### **Unusual Fire and Explosion Hazards:**

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 may produce flammable vapours.

#### **Hazardous Decomposition Products:**

Thermal decomposition products include carbon monoxide and carbon dioxide.

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### **ADDITIONAL INFORMATION**

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#### **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.

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#### **ENVIRONMENTAL INFORMATION**

##### 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

##### Potential to Bioaccumulate:

Acetone has negligible potential to bioaccumulate (Octanol/Water Partition Coefficient Log  $K_{OW}$ : -0.24).

##### Persistence and Biodegradability:

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-m<sup>3</sup>/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.

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#### **HAZARDOUS SUBSTANCE CLASSIFICATION**

Health hazard classification/labelling according to the criteria of NOHSC:

Xi (IRRITANT)

R11 Highly flammable (1).

R36 Irritating to the eyes (4).

R66 Repeated exposure may cause skin dryness or cracking (2).

R67 Vapours may cause drowsiness and dizziness (2).

S(2) Keep out of reach of children (3).

S9 Keep container in a well ventilated place.

S16 Keep away from ignition sources – No smoking.

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

#### Notes:

(1) Risk (R) phrases for physico-chemical hazards are given for information (see ADG Code classification).

(2) R66 and R67 are new Risk phrases included in EU classification (not listed in NOHSC:1008 (1999)).

(3) Brackets in S(2) mean that this Safety phrase is to be used for labelling of products sold to the public (In Australia, Safety Phrase S(2) is not required on labels for Acetone sold for industrial use only). For other countries' labelling requirements, refer to relevant labelling regulations.

(4) Acetone is classified as R36 in solid or liquid mixtures at concentrations equal to or greater than 20% w/w. [NOHSC:1008 (1999), Table 7]. Huntsman has notified NOHSC of hazardous substance classification (Jun 2000).

#### **REASONS FOR REVISION**

1. Supersedes Issue of 1 Jun 2000.
2. New Zealand Toxic Substances Schedule included (p.5).
3. Correction to Risk Phrase R66 (p.8)
4. Hazard Classification Note 4 added; changes to Note 3 (p.8).
5. Minor changes to "Health Effects" section (pp.2 & 3).

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#### **CONTACT POINT**

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