

MATERIAL SAFETY DATA SHEET
Hazardous according to criteria of Worksafe Australia

Date of Issue : Sep 2001

1. IDENTIFICATION

General

Product Name : ACETONE

Other Names : 2-PROPANONE; DIMETHYL KETONE; DIMETHYL KETAL

UN No. : 1090

Dangerous Goods Class : 3

Subsidiary Risk : None Allocated

Hazchem Code : 2[Y]E

Pack Group : II

EPG : 14

Poisons Schedule : 5

Uses :

Chemicals (methylisobutylketone, methylisobutylcarbinol, bisphenol-A methylmethacrylate); paint, varnish & lacquer solvent; cellulose acetate, especially as spinning solvent; to clean and dry parts of precision equipment; solvent for potassium iodide and permanganate; delusterant for cellulose acetate fibers; specification testing of vulcanised rubber products.

1.1 Physical Description / Properties

Appearance : Clear, colourless liquid with a characteristic pungent sweetish odour.

Formula : CH₃COCH₃

Boiling Point : 56.0 deg C

Melting Point : -94 deg C

Vapour Pressure : 180 mm Hg (1 atmosphere)

Specific Gravity : 0.791 (water = 1)

Flash Point : Closed Cup -17

pH : Not available ()

Solubility in water : 100% g/l (25 deg C)

Flammability Limits (as percentage volume in air)

Lower Explosion Limit : 2.15

Upper Explosion Limit : 13

1.2 Other Properties

Autoignition temperature = 465 deg C Viscosity @ 25 deg C = 0.303 cP Evaporation rate = 6 (n-butyl acetate = 1) Vapour density = 2.0 (air=1) Solubility = completely miscible with alcohol, dimethyl formamide, chloroform and ether and most oils. Percent volatiles = 100 Odour Threshold = 100 - 140 ppm

1.3 Ingredients

Chemical Entity	CAS No.	Proportions (%)
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ACETONE	[67-64-1]	99.5
WATER	[7732-18-5]	0.5

2. HEALTH HAZARD INFORMATION

2.1 Health Effects - Acute

Swallowed

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

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.

Skin

Brief contact may cause mild irritation. Due to its low toxicity and high volatility, acetone is unlikely to be absorbed through the skin in harmful amounts unless evaporation is prevented.

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.

2.2 Health Effects - Chronic

Repeated or prolonged exposure may cause irritant contact dermatitis. Three 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-trichloroethylene 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 reported care should be taken. Exposure to high concentrations of acetone may aggravate pre-existing disorders in humans.

2.3 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. Keep at rest. Seek prompt medical attention.

First Aid Facilities

Ensure an eye bath and safety shower are available and ready for use.

2.5 Advice to Doctor

Treat symptomatically based on judgement of doctor and individual reactions of patient. Aspiration of this product during induced vomiting may result in lung injury.

2.6 Toxicity Data

Oral LD50 = 5.8 - 8.4 g/kg (rat) Practically non toxic Dermal LD50 = 20 g/kg (rabbit) Practically non toxic Eye irritation = 25 - 50 on a scale of 110, moderately irritating. Skin irritation = 0.5 - 3.0 on a scale of 8.0, slightly toxic (rabbit) Inhalation LC50 = 32000 ppm for 4hrs (rat) 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.

3. PRECAUTIONS FOR USE

3.1 Exposure Standards

TWA = 500 ppm (1,185 mg/m³) Worksafe STEL = 1,000 ppm (2,375 mg/m³) Worksafe

3.2 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.

3.3 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 atmosphere. High airborne concentrations may require the use of self-contained breathing apparatus or supplied breathing apparatus or supplied air respirator. Hand protection - Wear impervious gloves (e.g rubber gloves). Eye protection - Wear chemical splash goggles. Clothing and Other personal protection - For brief exposure no precautions other than clean body covering clothing should be needed. 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.

3.4 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.

SAFE HANDLING INFORMATION

4.1 Storage / Transport

Store and transport in accordance with all applicable regulations for Class 3 liquids. Keep container closed. Open slowly in order to control possible pressure release. Store in a cool, well-ventilated area away from incompatible materials. Keep away from sources of ignition - No smoking. Keep away from strong oxidising agents, strong alkalis, strong mineral acids and bromine. Many plastics may be unsuitable as storage and handling materials.

4.2 Packaging / Labelling

UN No. 1090

Class 3

Sub Risk None Allocated

Hazchem Code 2[Y]E

Pack Group II

EPG No. 14

Shipping Name ACETONE

Hazard IRRITANT

Risk Phrases

R11 Highly flammable.

R36 Irritating to eyes.

R66 Repeated exposure may cause skin dryness and cracking.

R67 Vapours may cause drowsiness and dizziness.

Safety Phrases

S2 Keep out of the reach of children.

S9 Keep container in a well ventilated place.

S16 Keep away from sources of ignition.

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

4.3 Spills and Disposal

Spills

Remove all sources of ignition - NO SMOKING. Keep unprotected people away. Wear self-contained breathing apparatus. Shut off leak if possible to do so without danger. Increase ventilation. Keep out of sewer, stormwater drains and waterways. Use water spray to disperse vapours.

Contain and absorb spill with water dampened absorbent such as sand, earth or vericulite 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.

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 flammable. In all cases, disposal should be in accordance with regulations. 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.

4.4 FIRE AND EXPLOSION HAZARD

Fire / Explosion

Extreme hazard. Leaks of gas or spills of liquid can readily form flammable mixtures at temperatures at or above the flash point. Avoid contact with caustics, amines, alkanolamines, aldehydes, ammonia, strong oxidising agents, and chlorinated compounds. Incompatible materials and coatings include natural rubber, amine epoxy coatings, vinyl coatings, neoprene rubber, Buna N, PVC. 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 include carbon monoxide and carbon dioxide.

Extinguishing Media

Use water spray to cool fire exposed surfaces and to protect personnel. Shut off "fuel" to fire. If a leak or spill has not ignited, use water spray to disperse the vapours and to protect men attempting to stop a leak. Either allow fire to burn under controlled conditions or extinguish with alcohol type foam or dry chemical. Carbon dioxide may also be used. Fire fighter should wear self-contained breathing apparatus. Equipment should be thoroughly decontaminated after use.

5 OTHER INFORMATION

Other Information

Environmental information - Aquatic toxicity : Fish toxicity (rainbow trout, goldfish, bluegill) LC50 (96hrs) = 5000-13000 mg/L Daphnia magna EC50 (24hr) = > 10000 mg/L Daphnia magna EC50 (48hrs) = 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 Kow : -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"

5.1 Contact Points

Organisation	Location	Telephone	Ask For
Redox Chemicals Pty Ltd	Wetherill Park NSW	02-97255155	Technical Officer
Poisons Information Centre	Westmead	131129	
		1800-251525	