

(10312)

MATERIAL SAFETY DATA SHEET

ACETONE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Brenntag Canada Inc.
43 Jutland Rd.
Toronto, ON
M8Z 2G6
(416) 259-8231

WHMIS#: 00060014
Index: GCD0843/13D
Effective Date: 2013 November 01
Date of Revision: 2013 November 01

Website: <http://www.brenntag.ca>

EMERGENCY TELEPHONE NUMBER (For Emergencies Involving Chemical Spills or Releases)

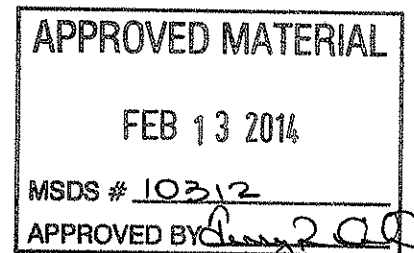
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PRODUCT IDENTIFICATION

Product Name: Acetone.
Chemical Name: 2-Propanone.
Synonyms: Dimethyl Ketone; Dimethylformaldehyde.
Chemical Family: Ketones.
Molecular Formula: C3H6O ; CH3 - CO - CH3.
Product Use: Industrial solvent, cleaner, degreaser.

WHMIS Classification / Symbol:

B-2: Flammable Liquid
D-2B: Toxic (eye irritant)



READ THE ENTIRE MSDS FOR THE COMPLETE HAZARD EVALUATION OF THIS PRODUCT.

2. COMPOSITION, INFORMATION ON INGREDIENTS (Not Intended As Specifications)

Ingredient	CAS#	ACGIH TLV (TWA)	% Concentration
Acetone	67-64-1	500 ppm *A4	80 - 100

A4 = Not classifiable as a human carcinogen. (ACGIH-A4).

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW: Causes severe eye irritation. Mists or sprays are extremely irritating to eyes and respiratory tract. High vapour concentrations may cause drowsiness. See "Other Health Effects" Section. Extremely flammable liquid and vapour. May cause flash fire or explosion. Can decompose at high temperatures forming toxic gases. Contents may develop pressure on prolonged exposure to heat.

POTENTIAL HEALTH EFFECTS

Inhalation: Contact with mist or spray may cause irritation of mucous membranes, coughing and difficulty in breathing. See "Other Health Effects" Section.
Skin Contact: May cause defatting, drying and cracking of the skin. Prolonged, confined (especially under the finger nails, under rings or watch bands) or repeated exposure may cause skin irritation. Prolonged and repeated contact may lead to dermatitis.
Skin Absorption: A single, prolonged skin exposure is not likely to result in the absorption of toxic amounts of the material.

Eye Contact: Causes severe eye irritation. Vapours from this product are irritating to the eyes.

Ingestion: Ingestion is not a likely route of exposure. Ingestion of large amounts may cause nausea, gastrointestinal upset and abdominal pain.

Other Health Effects: Effects (irritancy) on the skin and eyes may be delayed, and damage may occur without the sensation or onset of pain. Strict adherence to first aid measures following any exposure is essential.

4. FIRST AID MEASURES

FIRST AID PROCEDURES

Inhalation: Move victim to fresh air. Give artificial respiration ONLY if breathing has stopped. Give cardiopulmonary resuscitation (CPR) if there is no breathing AND no pulse. Obtain medical attention IMMEDIATELY.

Skin Contact: Start flushing while removing contaminated clothing. Wash affected areas thoroughly with soap and water. If irritation, redness, or a burning sensation develops and persists, repeat flushing and obtain medical attention.

Eye Contact: Immediately flush eyes with running water for a minimum of 20 minutes. Hold eyelids open during flushing. Take care not to rinse contaminated water into the unaffected eye or onto the face. If irritation persists, repeat flushing. Obtain medical attention IMMEDIATELY.

Ingestion: Do not attempt to give anything by mouth to an unconscious person. If victim is alert and not convulsing, rinse mouth out and give 1/2 to 1 glass of water to dilute material. IMMEDIATELY contact local Poison Control Centre. Vomiting should only be induced under the direction of a physician or a poison control centre. If spontaneous vomiting occurs, have victim lean forward with head down to avoid breathing in of vomitus, rinse mouth and administer more water. IMMEDIATELY transport victim to an emergency facility.

Note to Physicians: This product contains materials that may cause severe pneumonitis if aspirated. If ingestion has occurred less than 2 hours earlier, carry out careful gastric lavage; use endotracheal cuff if available, to prevent aspiration. Observe patient for respiratory difficulty from aspiration pneumonitis. Give artificial resuscitation and appropriate chemotherapy if respiration is depressed.

Medical conditions that may be aggravated by exposure to this product include neurological and cardiovascular disorders, diseases of the skin, eyes or respiratory tract, preexisting liver and kidney disorders.

5. FIRE-FIGHTING MEASURES

Flashpoint (°C)	Autoignition Temperature (°C)	Flammability Limits in Air (%):	
		LEL	UEL
-17. (3)	465. (3,4)	2.5. (3,4)	12.8. (3,4)
Flammability Class (WHMIS):	B-2: Flammable Liquid		
Hazardous Combustion Products:	Thermal decomposition products are toxic and may include oxides of carbon and irritating gases.		
Unusual Fire or Explosion Hazards:	Extremely flammable liquid and vapour. May cause flash fire or explosion. Vapours from this product are heavier than air, and may "travel" to a source of ignition (eg. pilot lights, heaters, electric motors) some distance away, and then "flash back" to the point of product discharge causing an explosion and fire. Closed containers exposed to heat may explode. Spilled material may cause floors and contact surfaces to become slippery. Enforce NO SMOKING rules in area of use.		
Sensitivity to Mechanical Impact:	Not expected to be sensitive to mechanical impact.		
Rate of Burning:	Not available.		
Explosive Power:	Not available.		
Sensitivity to Static Discharge:	Expected to be sensitive to static discharge when vapours are present between the lower and upper explosive limits.		

EXTINGUISHING MEDIA

Fire Extinguishing Media: Use carbon dioxide or dry chemical media for small fires. If only water is available, use it in the form of a fog. This material may produce a floating fire hazard in extreme fire conditions. Water may be ineffective due to low flash point. Use water spraying for cooling.

FIRE FIGHTING INSTRUCTIONS

Instructions to the Fire Fighters: Use water spray to cool fire-exposed containers or structures. Use water spray to disperse vapours; re-ignition is possible. Isolate materials that are not involved in the fire and protect personnel. Cool containers with flooding quantities of water until well after the fire is out. Spilled material may cause floors and contact surfaces to become slippery.

Fire Fighting Protective Equipment: Use self-contained breathing apparatus and protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Information in this section is for responding to spills, leaks or releases in order to prevent or minimize the adverse effects on persons, property and the environment. There may be specific reporting requirements associated with spills, leaks or releases, which change from region to region.

Containment and Clean-Up Procedures: In all cases of leak or spill contact vendor at Emergency Number shown on the front page of this MSDS. Wear respirator, protective clothing and gloves. Extremely flammable liquid and vapour. May cause flash fire or explosion. Do not use combustible materials such as sawdust as an absorbent. Eliminate all sources of ignition. Collect product for recovery or disposal. For release to land, or storm water runoff, contain discharge by constructing dykes or applying inert absorbent; for release to water, utilize damming and/or water diversion to minimize the spread of contamination. Ventilate enclosed spaces. Notify applicable government authority if release is reportable or could adversely affect the environment.

7. HANDLING AND STORAGE

HANDLING

Handling Practices: Ground and bond equipment and containers to prevent a static charge buildup. Use spark-resistant tools and avoid "splash-filling" of containers. Use normal "good" industrial hygiene and housekeeping practices. Drums which have been exposed to heat may be under internal pressure. These should be cooled and carefully vented before opening. A face shield and apron should be worn. Vent container frequently, and more often in warm weather, to relieve pressure. Enforce NO SMOKING rules in area of use.

Ventilation Requirements: See Section 8, "Engineering Controls".

Other Precautions: Use only with adequate ventilation and avoid breathing aerosols (vapours or mists). Avoid contact with eyes, skin or clothing. Wash thoroughly with soap and water after handling. Wash contaminated clothing thoroughly before re-use. Do not use cutting or welding torches on empty drums that contained this material/product. Absorption via contact with skin, eyes and mucous membranes can contribute to the overall exposure. Consider measures to prevent absorption by these routes. Store wiping rags and similar material in metal cans with tight fitting lids.

STORAGE

Storage Temperature (°C): See below.

Ventilation Requirements: Ventilation should be explosion proof.

Storage Requirements: Store in a cool, well-ventilated area. Keep away from heat, sparks and flames. Keep containers closed. Do not expose sealed containers to temperatures above 40° C. Protect from direct sunlight. Protect against physical damage.

Special Materials to be Used for Packaging or Containers: Confirm suitability of any material before using. Attacks some types of rubber, plastics and coatings.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Recommendations listed in this section indicate the type of equipment, which will provide protection against overexposure to this product. Conditions of use, adequacy of engineering or other control measures, and actual exposures will dictate the need for specific protective devices at your workplace.

ENGINEERING CONTROLS

Engineering Controls: Local exhaust ventilation required. Ventilation should be explosion proof. Make up air should be supplied to balance air that is removed by local or general exhaust ventilation. Ventilate low lying areas such as sumps or pits where dense vapours may collect.

For personnel entry into confined spaces (i.e. bulk storage tanks) a proper procedure must be followed. It must include consideration of, among other things, ventilation, testing of tank atmosphere, provision and maintenance of SCBA, and emergency rescue. Use the "buddy" system. The second person should be in view and trained and equipped to execute a rescue. (6)

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Eye Protection: Safety glasses with side shields are recommended to prevent eye contact. Use full face-shield or chemical safety goggles when there is potential for contact. Contact lenses should not be worn when working with this material.

Skin Protection: Prior to use, user should confirm impermeability. Discard contaminated gloves.

Respiratory Protection: No specific guidelines available. A NIOSH/MSHA-approved air-purifying respirator equipped with organic vapour cartridges for concentrations up to 1 000 ppm organic vapours. An air-supplied respirator if concentrations are higher or unknown.

Other Personal Protective Equipment: Immediately Dangerous to Life and Health (IDLH) value: 2 500 ppm. (4) The purpose of establishing an IDLH value is to ensure that the worker can escape from a given contaminated environment in the event of failure of the most protective respiratory equipment. In the event of failure of respiratory protective equipment, every effort should be made to exit immediately. (4)

Wear an impermeable apron and boots. Locate safety shower and eyewash station close to chemical handling area. Take all precautions to avoid personal contact. Clothing and footwear that is fire retardant and dissipates static electrical charges should be worn when handling flammable materials. Natural fibers (cotton, wool, leather and linen) should be selected in favour of synthetic materials (rayon, nylon and polyester).

EXPOSURE GUIDELINES

SUBSTANCE	ACGIH TLV (STEL)	OSHA PEL		NIOSH REL	
		(TWA)	(STEL)	(TWA)	(STEL)
Acetone	750 ppm	1 000 ppm	---	250 ppm	---

9. PHYSICAL AND CHEMICAL PROPERTIES (Not intended as Specifications)

Physical State: Liquid.

Appearance: Clear, colourless liquid.

Odour: Characteristic odour.

Odour Threshold (ppm): 62 ppm.

Boiling Range (°C): 56.

Melting/Freezing Point (°C): -94.

Vapour Pressure (mm Hg at 20° C): 180 - 181.

Vapour Density (Air = 1.0): 2.

Relative Density (g/cc): 0.792

Bulk Density: Not available.

Viscosity: Not available.

Evaporation Rate (Butyl Acetate = 1.0): 5.6.

Solubility: Soluble in water.

% Volatile by Volume: 100.

pH: 7.

Coefficient of Water/Oil Distribution: 0.2.

Volatile Organic Compounds (VOC): Not available.

Flashpoint (°C): -17. (3)

10. STABILITY AND REACTIVITY

CHEMICAL STABILITY

Under Normal Conditions: Stable.

Under Fire Conditions: Flammable.

Hazardous Polymerization: Will not occur.

Conditions to Avoid: High temperatures, sparks, open flames and all other sources of ignition.

Materials to Avoid: Strong oxidizers.

May form explosive mixtures with: Chromic Anhydride. Chromyl Alcohol. Hexachloromelamine. Hydrogen Peroxide. Permonosulphuric acid. Potassium tert-Butoxide.

Decomposition or Combustion Products: Thermal decomposition products are toxic and may include oxides of carbon and irritating gases.

11. TOXICOLOGICAL INFORMATION

TOXICOLOGICAL DATA:

<i>SUBSTANCE</i>	<i>LD50 (Oral, Rat)</i>	<i>LD50 (Dermal, Rabbit)</i>	<i>LC50 (Inhalation, Rat, 4h)</i>
Acetone	5 800 - 6 700 mg/kg (1, 3)	15 700 - 15 800 mg/kg (3)	32 000 ppm (1, 3)
Carcinogenicity Data:	The ingredient(s) of this product is (are) not classed as carcinogenic by ACGIH, IARC, OSHA or NTP. See "Other Studies Relevant to Material".		
Reproductive Data:	A study of 25 men exposed to acetone and styrene during the manufacturing of reinforced plastics showed an increased percentage of abnormal sperm head shapes compared to the controls. A study of 891 women who worked or were working in the semiconductor industry showed an increased risk of miscarriages among fabrication workers. (4)		
Mutagenicity Data:	Negative results have been obtained in tests using cultured human cells. Negative results have also been obtained in a study which used live animals, cultured mammalian cells and bacteria. (4)		
Teratogenicity Data:	Acetone may cause teratogenic / embryotoxic effects based on studies in laboratory animals, but only at high, generally toxic doses.		
Respiratory / Skin Sensitization Data:	None known.		
Synergistic Materials:	Acetone has increased the liver toxicity of chemicals, such as, carbon tetrachloride, chloroform and trichloroethylene. Acetone has also increased the lung toxicity of styrene and the toxicity of acrylonitrile and 2,5 hexanedione in laboratory animals. Acetone also appears to inhibit the metabolism and elimination of ethyl alcohol, thereby potentiating its toxicity. Acetone can increase or decrease the toxicity of 1,2-dichlorobenzene, depending on the concentration of Acetone. (4)		

Other Studies Relevant to
Material:

Human Toxicity: Volunteers exposed by inhalation to 500 ppm Acetone vapours reported no harmful effects. However, there have been case reports of slight irritation to the nose and throat when exposed to 300 to 500 ppm. Exposure for 4 hours to 250 ppm has caused mild effects on performance in some behavioral tests (auditory tone discrimination and a mood test). Concentrations around 1,000 ppm caused noticeable irritation, headaches, light headedness and fatigue. Inhalation in excess of 2,000 ppm caused dizziness, a feeling of drunkenness, drowsiness, nausea and vomiting. Tolerance to the effects of Acetone can develop. (4)

In long term inhalational studies, there were no statistically significant differences in causes of death or clinical laboratory results observed in 948 employees exposed to 1,070 ppm Acetone over 23 years. (4)

Acetone vapour causes mild irritation to the eye at concentrations around 500 ppm. The irritation is very noticeable at 1,000 ppm. Liquid Acetone is severely irritating based on limited human information. In 3 cases Acetone caused corneal injury which completely healed within 48 hours. (4)

Ingestion is an unlikely occupational route of exposure to Acetone, however Acetone causes no effects or minor effects in people who have ingested up to 20 g/day for several days. (4)

Animal Toxicity: Application of undiluted Acetone (0.005 mL) to the rabbit eye produced severe irritation. In Standardized Draize tests, application of 0.1 mL of undiluted Acetone cause severe irritation, while 1 - 30 % solutions resulted in minimal irritation. In a modified Draize test, it was reported that 0.1 mL caused corrosive eye injury. (4)

Undiluted Acetone applied to the skin (approx. 0.1 mL) produced no irritation in rabbits or guinea pigs. (4)

Acetone concentrations in excess of 8,000 ppm are required to produce symptoms of central nervous depression. The concentration of Acetone to depress the respiratory rate by 50 % (RD50) was estimated to be 23,480 ppm to 77,516 ppm. These results indicate that Acetone is a weak sensory irritant. (4)

Oral exposure to large doses of Acetone in drinking water for 14 days had produced mild toxicity in rats and mice. Compared to controls, male rats receiving approximately 4,300 or 7,000 mg/Kg/day and females given 8,500 mg/Kg/day had lower mean body weights. No changes were observed on the mean body weights of mice. Kidney and liver weights were higher for rats and mice. There was slight liver damage in female mice exposed to 5,550 mg/Kg/day and male mice exposed to 6,600 mg/Kg/day. (4)

Long term inhalational studies have not shown significant harmful effects following oral or inhalational exposures. Exposure of rats to high doses of Acetone resulted in decreased body weight and increased liver and kidney weights (approx. dose was 3,400 mg/Kg/day). Changes consistent with macrocytic anemia were observed in both males and females. Kidney damage was observed, however this damage appears to be gender and species specific. (4)

Rats exposed to 400, 2,200, and 11,000 ppm Acetone on days 6 to 19 of pregnancy showed signs of fetotoxicity (reduced fetal weights) at the highest dose which was toxic to the mother. Mice exposed by inhalation to doses of 400, 2,200 and 6,000 ppm Acetone on days 6 to 17 of pregnancy had fetotoxicity and embryotoxicity at the highest doses with signs of maternal toxicity. (4)

Sperm effects have been observed in rats already experiencing kidney damage. No effects on fertility have been observed. Rats and mice were exposed to up to 50,000 ppm Acetone in drinking water for 13 weeks. Sperm motility was decreased and the percentage of abnormal sperm increased in male rats, at the high dose of 4,300 mg/Kg/day. These effects were not observed in mice. No effects on reproductive or testicular toxicity were observed in male rats fed 0.5 % Acetone in their drinking water for 6 weeks. (4)

Negative results were obtained in peripheral blood cells of mice receiving 5,000 to 20,000 ppm Acetone in drinking water for 13 weeks. Negative results have been obtained in tests using cultured mammalian cells and bacteria. (4)

12. ECOLOGICAL INFORMATION

Ecotoxicity: May be harmful to aquatic life.

Acetone: Fish toxicity: 96-hour = 5 540 mg/l (rainbow trout). (3)
Fish toxicity: 96-hour = 8 300 mg/l (bluegill sunfish). (3)

Environmental Fate: This product is biodegradable. This product does not bioaccumulate in aquatic or terrestrial food chains. Volatilizes rapidly. Do not contaminate domestic or irrigation water supplies, lakes, streams, ponds, or rivers.

13. DISPOSAL CONSIDERATIONS

Deactivating Chemicals:	None required.
Waste Disposal Methods:	This information applies to the material as manufactured. Reevaluation of the product may be required by the user at the time of disposal since the product uses, transformations, mixtures and processes may influence waste classification. Dispose of waste material at an approved (hazardous) waste treatment/disposal facility in accordance with applicable local, provincial and federal regulations. Do not dispose of waste with normal garbage, or to sewer systems.
Safe Handling of Residues:	Extremely flammable liquid and vapour. May cause flash fire or explosion. See "Waste Disposal Methods".
Disposal of Packaging:	Empty containers retain product residue (liquid and/or vapour) and can be dangerous. Empty drums should be completely drained, properly bunged and promptly returned to a drum reconditioner. Do not expose such containers to heat, flame, sparks, static electricity, or other sources of ignition; they may explode and cause injury or death. Do not dispose of package until thoroughly washed out.

14. TRANSPORTATION INFORMATION

CANADIAN TDG ACT SHIPPING DESCRIPTION:

ACETONE, Class 3, UN1090, PG II.

Label(s): Flammable Liquids. Placard: Flammable Liquids.

ERAP Index: ----- Exemptions: None known.

US DOT CLASSIFICATION (49CFR 172.101, 172.102):

ACETONE, Class 3, UN1090, PG II.

Label(s): Flammable Liquid. Placard: Flammable Liquid.

CERCLA-RQ: Acetone: 5 000 lb / 2 270 kg. Exemptions: None known.

15. REGULATORY INFORMATION

CANADA

CEPA - NSNR: This material is included on the DSL under the CEPA.

CEPA - NPRI: Not included.

Controlled Products Regulations Classification (WHMIS):

B-2: Flammable Liquid

D-2B: Toxic (eye irritant)

USA

Environmental Protection Act: This material is included on the TSCA inventory.

OSHA HCS (29CFR 1910.1200): Flammable Liquid. Eye Irritant.

NFPA: 1 Health, 3 Fire, 0 Reactivity (3)

HMIS: 1 Health, 3 Fire, 0 Reactivity (3)

INTERNATIONAL

The following component or components of this product appear on the European Inventory of Existing Commercial Chemical Substances: Acetone. (3)

16. OTHER INFORMATION

REFERENCES

1. RTECS-Registry of Toxic Effects of Chemical Substances, Canadian Centre for Occupational Health and Safety RTECS database.
2. Clayton, G.D. and Clayton, F.E., Eds., Patty's Industrial Hygiene and Toxicology, 3rd ed., Vol. IIA,B,C, John Wiley and Sons, New York, 1981.
3. Supplier's Material Safety Data Sheet(s).
4. CHEMINFO chemical profile, Canadian Centre for Occupational Health and Safety, Hamilton, Ontario, Canada.
5. Guide to Occupational Exposure Values, 2011, American Conference of Governmental Industrial Hygienists, Cincinnati, 2011.

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6. Regulatory Affairs Group, Brenntag Canada Inc.
 7. The British Columbia Drug and Poison Information Centre, Poison Managements Manual, Canadian Pharmaceutical Association, Ottawa, 1981.
 8. NFPA 325M Fire Hazard Properties of Flammable Liquids, Gases, and Volatile Solids, 1994 Edition, Quincy, MA, 1994.
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To obtain revised copies of this or other Material Safety Data Sheets, contact your nearest Brenntag Canada Regional office.

British Columbia: 20333-102B Avenue, Langley, BC, V1M 3H1
Phone: (604) 513-9009 Facsimile: (604) 513-9010

Alberta: 6628 - 45 th. Street, Leduc, AB, T9E 7C9
Phone: (780) 986-4544 Facsimile: (780) 986-1070

Manitoba: 681 Plinquet Street, Winnipeg, MB, R2J 2X2
Phone: (204) 233-3416 Facsimile: (204) 233-7005

Ontario: 43 Jutland Road, Toronto, ON, M8Z 2G6
Phone: (416) 259-8231 Facsimile: (416) 259-5333

Quebec: 2900 Jean Baptiste Des., Lachine, PQ, H8T 1C8
Phone: (514) 636-9230 Facsimile: (514) 636-0877

Atlantic: A-105 Akerley Boulevard, Dartmouth, NS, B3B 1R7
Phone: (902) 468-9690 Facsimile: (902) 468-3085

Prepared By: Regulatory Affairs Group, Brenntag Canada Inc., (416) 259-8231.