



Shell Chemicals

Material Safety Data Sheet

According to OSHA Hazard Communication Standard, 29 CFR 1910.1200

Acetone
MSDS# 5380
Version 15.2
Effective Date 02/23/2005
1910.1200

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1/17/06

1. MATERIAL AND COMPANY IDENTIFICATION

Material Name : Acetone
Uses : Industrial Solvent. Restricted to professional users.
Product Code : S1212, U8903, S1260
Company : Shell Chemical LP
 PO Box 2463
 HOUSTON TX 77252-2463
 USA
MSDS Request : 1-800-240-6737
Customer Service : 1-888-897-4355

Emergency Telephone Number
Chemtrec Domestic (24 hr) : 1-800-424-9300
Chemtrec International (24 hr) : 1-703-527-3887

2. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Concentration
Acetone	67-64-1	100.00%

3. HAZARDS IDENTIFICATION

Emergency Overview	
Appearance and Odour	: Clear. Liquid. Characteristic.
Health Hazards	: Vapours may cause drowsiness and dizziness. Irritating to eyes. Harmful; may cause lung damage if swallowed.
Safety Hazards	: Extremely flammable. Vapours are heavier than air. Vapours may travel across the ground and reach remote ignition sources causing a flashback fire danger. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire.
Environmental Hazards	: Not classified as dangerous under EC criteria.

Health Hazards
Inhalation : Vapours may cause drowsiness and dizziness. Slightly irritating to respiratory system.
Skin Contact : Repeated exposure may cause skin dryness or cracking.
Eye Contact : Irritating to eyes.
Ingestion : Harmful; may cause lung damage if swallowed.
Other Information :
 Exposure may enhance the toxicity of other materials. See Chapter 11 for details.
Signs and Symptoms : Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, light-



headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death. Defatting dermatitis signs and symptoms may include a burning sensation and/or a dried/cracked appearance. Eye irritation signs and symptoms may include a burning sensation, redness, swelling, and/or blurred vision. If material enters lungs, signs and symptoms may include coughing, choking, wheezing, difficulty in breathing, chest congestion, shortness of breath, and/or fever.

- Aggravated Medical Condition** : Pre-existing medical conditions of the following organ(s) or organ system(s) may be aggravated by exposure to this material: Eyes. Respiratory system. Skin.
- Environmental Hazards** : Not classified as dangerous under EC criteria.

4. FIRST AID MEASURES

- Inhalation** : Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.
- Skin Contact** : Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.
- Eye Contact** : Immediately flush eyes with large amounts of water for at least 15 minutes while holding eyelids open. Transport to the nearest medical facility for additional treatment.
- Ingestion** : If swallowed, do not induce vomiting; transport to nearest medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration.
- Advice to Physician** : Potential for chemical pneumonitis. Consider: gastric lavage with protected airway, administration of activated charcoal.

5. FIRE FIGHTING MEASURES

Clear fire area of all non-emergency personnel.

- Flash point** : -18 °C / 0 °F (JP 170)
- Explosion / Flammability limits in air** : ca. 2.1 - 13 %(V)
- Auto ignition temperature** : 540 °C / 1,004 °F (ASTM D-2155)
- Specific Hazards** : Containers exposed to intense heat from fires should be cooled with large quantities of water. The vapour is heavier than air, spreads along the ground and distant ignition is possible.
- Extinguishing Media** : Alcohol-resistant foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.
- Protective Equipment for Firefighters** : Wear full protective clothing and self-contained breathing apparatus. Proper protective equipment including breathing apparatus must be worn when approaching a fire in a confined space.
- Additional Advice** : All storage areas should be provided with adequate fire fighting facilities. Keep adjacent containers cool by spraying with water.

**6. ACCIDENTAL RELEASE MEASURES**

Avoid contact with spilled or released material. Immediately remove all contaminated clothing. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet. Observe all relevant local and international regulations.

- Protective measures** : Isolate hazard area and deny entry to unnecessary or unprotected personnel. Stay upwind and keep out of low areas. Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment to avoid environmental contamination. Prevent from spreading or entering drains, ditches or rivers by using sand, earth, or other appropriate barriers. Attempt to disperse the vapour or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Ventilate contaminated area thoroughly.
- Clean Up Methods** : For large liquid spills (> 1 drum), transfer by mechanical means such as vacuum truck to a salvage tank for recovery or safe disposal. Do not flush away residues with water. Retain as contaminated waste. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely. For small liquid spills (< 1 drum), transfer by mechanical means to a labelled, sealable container for product recovery or safe disposal. Allow residues to evaporate or soak up with an appropriate absorbent material and dispose of safely. Remove contaminated soil and dispose of safely.
- Additional Advice** : Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Local authorities should be advised if significant spillages cannot be contained. Vapour may form an explosive mixture with air. See Chapter 13 for information on disposal. U.S. regulations may require reporting releases of this material to the environment which exceed the reportable quantity (refer to Chapter 15) to the National Response Centre at (800) 424-8802.

7. HANDLING AND STORAGE

- General Precautions** : Avoid breathing of or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material.
- Handling** : Avoid inhaling vapour and/or mists. Avoid contact with skin, eyes, and clothing. Extinguish any naked flames. Do Not smoke. Remove ignition sources. Avoid sparks. Electrostatic



charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (≤ 1 m/sec until fill pipe submerged to twice its diameter, then ≤ 7 m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations.

- Storage** : Must be stored in a well-ventilated area, away from sunlight, ignition sources and other sources of heat. Keep away from aerosols, flammables, oxidizing agents, corrosives and from other flammable products which are not harmful or toxic to man or to the environment. The vapour is heavier than air. Beware of accumulation in pits and confined spaces. Vapours from tanks should not be released to atmosphere. Breathing losses during storage should be controlled by a suitable vapour treatment system. Bulk storage tanks should be diked (bunded).
- Product Transfer** : Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Keep containers closed when not in use. Do not use compressed air for filling, discharging or handling.
- Recommended Materials** : For containers, or container linings use mild steel, stainless steel. For container paints, use epoxy paint, zinc silicate paint.
- Container Advice** : Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.
- Additional Information** : Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. Ensure that all local regulations regarding handling and storage facilities are followed.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Occupational Exposure Limits

Material	Source	Type	ppm	mg/m3	Notation
Acetone	ACGIH	TWA	500 ppm		
	ACGIH	STEL	750 ppm		
	OSHA Z1	PEL	1,000 ppm	2,400 mg/m3	
	OSHA Z1A	TWA	750 ppm	1,800 mg/m3	
	OSHA Z1A	STEL	1,000 ppm	2,400 mg/m3	

- Additional information** : Shell has adopted as Interim Standards, the OSHA PELs that were established in 1989 and later rescinded.
- Exposure Controls** : The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances. Appropriate measures include: Provide adequate ventilation in



**Personal Protective Equipment
Respiratory Protection**

storage areas. Use sealed systems as far as possible. Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Local exhaust ventilation is recommended. Firewater monitors and deluge systems are recommended. Eye washes and showers for emergency use.

- : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.
- : If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Where air-filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for organic gases and vapours [boiling point <65°C (149°F)] meeting EN371. Where respiratory protective equipment is required, use a full-face mask. Where air-filtering respirators are unsuitable (e.g., airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. Respirator selection, use and maintenance should be in accordance with the requirements of the OSHA Respiratory Protection Standard, 29 CFR 1920.134.

Hand Protection

- : Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection: Nitrile rubber. PVC. Viton.

**Eye Protection
Protective Clothing**

- : Chemical splash goggles (chemical monogoggles).
- : Use protective clothing which is chemical resistant to this material. Safety shoes and boots should also be chemical resistant.

Monitoring Methods

- : Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Examples of sources of recommended air monitoring methods are given below or contact supplier. Further national methods may be available. National Institute of Occupational Safety and Health (NIOSH), USA: Manual of analytical Methods <http://www.cdc.gov/niosh/nmam/nmammenu.html> Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods <http://www.osha-slc.gov/dts/sltc/methods/toc.html> Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances <http://www.hsl.gov.uk/search.htm>

9. PHYSICAL AND CHEMICAL PROPERTIES



Material Safety Data Sheet

Appearance	: Clear. Liquid.
Odour	: Characteristic.
pH	: Not applicable.
Boiling point	: 56 °C / 133 °F
Flash point	: -18 °C / 0 °F (IP 170)
Explosion / Flammability limits in air	: ca. 2.1 - 13 %(V)
Auto-ignition temperature	: 540 °C / 1,004 °F (ASTM D-2155)
Vapour pressure	: 24.7 kPa at 20 °C / 68 °F
Density	: 790 - 792 kg/m ³ at 20 °C / 68 °F (ASTM D-4052)
Water solubility	: at 20 °C / 68 °F Completely miscible.
n-octanol/water partition coefficient (log P _{ow})	: 0.2
Dynamic viscosity	: 0.33 mPa.s at 20 °C / 68 °F
Vapour density (air=1)	: 2 at 20 °C / 68 °F
Electrical conductivity	: 20 µS/m at 20 °C / 68 °F (ASTM D-4308)
Coefficient of expansion	: 0.0014 / °C
Dielectric constant	21.4 at 20 °C / 68 °F
Heat of vapourisation	525 kJ/kg °C
Refractive index	1.359 at 20 °C / 68 °F (ASTM D-1218)
Specific heat	2.14 kJ/kg °C at 20 °C / 68 °F
Saturated Vapour concentration (in air)	590 g/m ³ at 20 °C / 68 °F (estimated value(s))
Thermal conductivity	0.16 W/m °C at 20 °C / 68 °F
Evaporation rate (nBuAc=1)	: 5.6 (ASTM D 3539, nBuAc=1) 2 (DIN 53170, di-ethyl ether=1)
Surface tension	: 22.8 mN/m at 20 °C / 68 °F
Molecular weight	: 58.08 g/mol

10. STABILITY AND REACTIVITY

Stability	: Stable under normal conditions of use.
Conditions to Avoid	: Avoid heat, sparks, open flames and other ignition sources.
Materials to Avoid	: Strong oxidising agents.
Hazardous Decomposition Products	: None expected under normal use conditions.

11. TOXICOLOGICAL INFORMATION

Basis for Assessment	: Information given is based on product testing.
Acute Oral Toxicity	: Low toxicity: LD50 >2000 mg/kg , Rat Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.
Acute Dermal Toxicity	: Low toxicity: LD50 >2000 mg/kg , Rabbit
Acute Inhalation Toxicity	: Low toxicity: LC50>5000 ppm / 1 hours, Rat High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.
Skin Irritation	: Not irritating to skin. Prolonged/repeated contact may cause defatting of the skin which can lead to dermatitis.



- Eye Irritation** : Irritating to eyes.
- Respiratory Irritation** : Inhalation of vapours or mists may cause irritation to the respiratory system.
- Sensitisation** : Not a skin sensitiser.
- Repeated Dose Toxicity** : Low systemic toxicity on repeated exposure.
- Mutagenicity** : Not mutagenic.

Material	: Carcinogenicity Classification
Acetone	: ACGIH Group A4: Not classifiable as a human carcinogen.

- Reproductive and Developmental Toxicity** : Causes slight foetotoxicity. Effects were seen at high doses only.
- Additional Information** : Exposure may enhance the toxicity of other materials. May potentiate the peripheral neurotoxicity of n-hexane, and the liver and kidney toxicity of some chlorinated hydrocarbons such as carbon tetrachloride.

12. ECOLOGICAL INFORMATION

- Acute Toxicity**
- Fish** : Low toxicity: LC/EC/IC50 > 1000 mg/l
- Aquatic Invertebrates** : Low toxicity: LC/EC/IC50 > 1000 mg/l
- Algae** : Low toxicity: LC/EC/IC50 > 1000 mg/l
- Microorganisms** : Low toxicity: LC/EC/IC50 > 1000 mg/l
- Mobility** : If product enters soil, it will be mobile and may contaminate groundwater.
Dissolves in water.
- Persistence/degradability** : Readily biodegradable.
- Bioaccumulation** : Not expected to bioaccumulate significantly.

13. DISPOSAL CONSIDERATIONS

- Material Disposal** : Recover or recycle if possible. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods in compliance with applicable regulations.
- Container Disposal** : Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not puncture, cut or weld uncleaned drums. Send to drum recoverer or metal reclaimer.
- Local Legislation** : Local regulations may be more stringent than regional or national requirements and must be complied with.

14. TRANSPORT INFORMATION

- US Department of Transportation Classification (49CFR)**
- Identification number : UN 1090
 - Proper shipping name : Acetone
 - Class / Division : 3
 - Packing group : II



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Acetone
MSDS# 5380
Version 15.2

Effective Date 02/23/2005
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Hazardous subst./material RQ: ACETONE/5,000.00 LB
Emergency Response Guide 127
No .

IMDG

Identification number UN 1090
Proper shipping name ACETONE
Class / Division 3
Packing group II
Marine pollutant: No

IATA (Country variations may apply)

Identification number UN 1090
Proper shipping name Acetone
Class / Division 3
Packing group II

15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

Federal Regulatory Status

Notification Status

AICS	Listed.
DSL	Listed.
INV (CN)	Listed.
ENCS (JP)	Listed. (2)-542
TSCA	Listed.
EINECS	Listed. 200-662-2
KECI (KR)	Listed. KE-29367
PICCS (PH)	Listed.

Comprehensive Environmental Release, Compensation & Liability Act (CERCLA)

Acetone (67-64-1)	Reportable quantity: 5,000 lbs
Acetone (67-64-1)	Reportable quantity: 5,000 lbs

SARA Hazard Categories (311/312)

Immediate (Acute) Health Hazard. Fire Hazard.

State Regulatory Status

California Safe Drinking Water and Toxic Enforcement Act (Proposition 65)



This material does not contain any chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

New Jersey Right-To-Know Chemical List

Acetone (67-64-1) 100.00% Listed.

Pennsylvania Right-To-Know Chemical List

Acetone (67-64-1) 100.00% Environmental hazard.
Listed.

16. OTHER INFORMATION

HMIS Rating (Health, Fire, Reactivity) : 1, 3, 0
NFPA Rating (Health, Fire, Reactivity) : 1, 3, 0
MSDS Version Number : 15.2

MSDS Effective Date : 02/23/2005

MSDS Revisions : A vertical bar (|) in the left margin indicates an amendment from the previous version.

MSDS Regulation : The content and format of this MSDS is in accordance with the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

MSDS Distribution : The information in this document should be made available to all who may handle the product

Disclaimer : The information contained herein is based on our current knowledge of the underlying data and is intended to describe the product for the purpose of health, safety and environmental requirements only. No warranty or guarantee is expressed or implied regarding the accuracy of these data or the results to be obtained from the use of the product.