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SECTION 1. IDENTIFICATION

Product name : Acetone Sustainable

Product code : U8906

Synonyms : Dimethyl Ketone, propan-2-one, 2-Propanone

CAS-No. : 67-64-1

Manufacturer or supplier's details

Company : Shell Chemical LP

PO Box 576

HOUSTON TX 77001

USA

SDS Request : 1-800-240-6737

Customer Service : 1-855-697-4355

Emergency telephone number

Chemtrec Domestic (24 hr) : 1-800-424-9300

Chemtrec International (24

hr)

: 1-703-527-3887

Recommended use of the chemical and restrictions on use

Recommended use : Industrial Solvent.

Restrictions on use : Restricted to professional users.

This product must not be used in applications other than those listed in Section 1 without first seeking the advice of the sup-

plier.

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)

Flammable liquids : Category 2

Eye irritation : Category 2A

Specific target organ toxicity

cicity : Category 3

- single exposure

GHS label elements

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Hazard pictograms





Signal word : Danger

Hazard statements : PHYSICAL HAZARDS:

H225 Highly flammable liquid and vapour.

HEALTH HAZARDS:

H319 Causes serious eye irritation. H336 May cause drowsiness or dizziness.

ENVIRONMENTAL HAZARDS:

Not classified as an environmental hazard under GHS criteria.

Precautionary statements

Prevention:

P210 Keep away from heat/ sparks/ open flames/ hot surfaces.

No smoking.

P240 Ground/bond container and receiving equipment.

P241 Use explosion-proof electrical/ ventilating/ lighting equipment.

P242 Use only non-sparking tools.

P243 Take precautionary measures against static discharge.

P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.

P264 Wash hands thoroughly after handling.

P271 Use only outdoors or in a well-ventilated area.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/ shower. P370 + P378 In case of fire: Use appropriate media to extinguish.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P312 Call a POISON CENTER/ doctor if you feel unwell.

Storage:

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.

P235 Keep cool.

P405 Store locked up.

Disposal:

P501 Dispose of contents and container to appropriate waste site or reclaimer in accordance with local and national regulations.

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Other hazards which do not result in classification

Even with proper grounding and bonding, this material can still accumulate an electrostatic charge.

If sufficient charge is allowed to accumulate, electrostatic discharge and ignition of flammable airvapour mixtures can occur.

Exposure may enhance the toxicity of other materials.

Repeated exposure may cause skin dryness or cracking.

Slightly irritating to respiratory system.

The classification of this material is based on OSHA HCS 2012 criteria.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture Substance

Hazardous components

Chemical name	Synonyms	CAS-No.	Concentration (% w/w)
acetone	acetone	67-64-1	<= 100
Benzene	Benzene	71-43-2	<= 0.003

SECTION 4. FIRST AID MEASURES

General advice Not expected to be a health hazard when used under normal

conditions.

If inhaled Remove to fresh air. If rapid recovery does not occur,

transport to nearest medical facility for additional treatment.

In case of skin contact Remove contaminated clothing. Flush exposed area with wa-

> ter and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.

In case of eye contact Immediately flush eye(s) with plenty of water.

Remove contact lenses, if present and easy to do. Continue

rinsing.

Transport to the nearest medical facility for additional treat-

ment.

If swallowed, do not induce vomiting: transport to nearest If swallowed

medical facility for additional treatment. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101° F (38.3°C), shortness of breath, chest congestion or continued coughing or wheezing.

Most important symptoms and effects, both acute and

delayed

Breathing of high vapour concentrations may cause central nervous system (CNS) depression resulting in dizziness, lightheadedness, headache, nausea and loss of coordination.

Continued inhalation may result in unconsciousness and

No specific hazards under normal use conditions.

Skin irritation signs and symptoms may include a burning sen-

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sation, redness, or swelling.

Eye irritation signs and symptoms may include a burning sen-

sation, 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.

If any of the following delayed signs and symptoms appear within the next 6 hours, transport to the nearest medical facility: fever greater than 101° F (38.3°C), shortness of breath, chest congestion or continued coughing or wheezing. Defatting dermatitis signs and symptoms may include a burn-

ing sensation and/or a dried/cracked appearance.

Protection of first-aiders : When administering first aid, ensure that you are wearing the

appropriate personal protective equipment according to the

incident, injury and surroundings.

Indication of any immediate medical attention and special

treatment needed

Treat symptomatically.

IMMEDIATE TREATMENT IS EXTREMELY IMPORTANT!

Call a doctor or poison control center for guidance.

Potential for chemical pneumonitis.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media : Alcohol-resistant foam, water spray or fog. Dry chemical pow-

der, carbon dioxide, sand or earth may be used for small fires

only.

Unsuitable extinguishing

media

None

Specific hazards during fire-

fighting

The vapour is heavier than air, spreads along the ground and

distant ignition is possible.

Carbon monoxide may be evolved if incomplete combustion

occurs.

Specific extinguishing meth-

ods

Standard procedure for chemical fires.

Further information : Clear fire area of all non-emergency personnel.

Keep adjacent containers cool by spraying with water.

Special protective equipment :

for firefighters

Proper protective equipment including chemical resistant

gloves are to be worn; chemical resistant suit is indicated if large contact with spilled product is expected. Self-Contained Breathing Apparatus must be worn when approaching a fire in a confined space. Select fire fighter's clothing approved to

relevant Standards (e.g. Europe: EN469).

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emer-

Observe the relevant local and international regulations Notify authorities if any exposure to the general public or the

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gency procedures environment occurs or is likely to occur.

Local authorities should be advised if significant spillages

cannot be contained.

The vapour is heavier than air, spreads along the ground and

distant ignition is possible.

Vapour may form an explosive mixture with air. Avoid contact with skin, eyes and clothing.

Isolate hazard area and deny entry to unnecessary or unpro-

tected personnel.

Stay upwind and keep out of low areas.

Environmental precautions

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.

Monitor area with combustible gas indicator.

Methods and materials for containment and cleaning up

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 labeled, 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

: For guidance on selection of personal protective equipment

see Section 8 of this Safety Data Sheet.

For guidance on disposal of spilled material see Section 13 of

this Safety Data Sheet.

U.S. regulations may require reporting releases of this material to the environment which exceed the reportable quantity (refer to Section 15) to the National Response Center at (800)

424-8802.

SECTION 7. HANDLING AND STORAGE

Technical measures : Avoid breathing of or direct contact with material. Only use in

well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see

Section 8 of this Safety Data Sheet.

Use the information in this data sheet as input to a risk as-

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sessment 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.

Advice on safe handling : Avoid contact with skin, eyes and clothing.

Use local exhaust ventilation if there is risk of inhalation of

vapours, mists or aerosols.

Bulk storage tanks should be diked (bunded).

Extinguish any naked flames. Do not smoke. Remove ignition

sources. Avoid sparks.

Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment to

reduce the risk.

The vapours in the head space of the storage vessel may lie in the flammable/explosive range and hence may be flamma-

ble.

Properly dispose of any contaminated rags or cleaning mate-

rials in order to prevent fires.

Do NOT use compressed air for filling, discharging, or han-

dling operations.

Avoidance of contact : Strong oxidising agents.

Product Transfer : Refer to guidance under Handling section.

Conditions for safe storage : The vapour is heavier than air. Beware of accumulation in pits

and confined spaces.

Refer to section 15 for any additional specific legislation cov-

ering the packaging and storage of this product.

Packaging material : Suitable material: For containers, or container linings use mild

steel, stainless steel.

Unsuitable material: Natural, butyl, neoprene or nitrile rubbers.

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.

Specific use(s) : Not applicable

Ensure that all local regulations regarding handling and stor-

age facilities are followed.

See additional references that provide safe handling practices: American Petroleum Institute 2003 (Protection Against Ignitions Arising out of Static, Lightning and Stray Currents) or National Fire Protection Agency 77 (Recommended Practices

on Static Electricity).

IEC/TS 60079-32-1: Electrostatic hazards, guidance

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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

Components	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
acetone	67-64-1	TWA	250 ppm	ACGIH
acetone		STEL	500 ppm	ACGIH
acetone		TWA	1,000 ppm 2,400 mg/m3	OSHA Z-1
Benzene	71-43-2	TWA	0.25 ppm 0.8 mg/m3	Shell Internal Standard (SIS) for 8-12 hour TWA.
Benzene		STEL	2.5 ppm 8 mg/m3	Shell Internal Standard (SIS) for 15 min (STEL)
Benzene		TWA	0.02 ppm	ACGIH
Benzene		STEL	2.5 ppm	ACGIH
Benzene		PEL	1 ppm	OSHA CARC
Benzene		STEL	5 ppm	OSHA CARC
Benzene		TWA	10 ppm	OSHA Z-2
Benzene		CEIL	25 ppm	OSHA Z-2
Benzene		Peak	50 ppm (10 minutes)	OSHA Z-2

Biological occupational exposure limits

Components	CAS-No.	Control	Biological	Sam-	Permissible	Basis
		parameters	specimen	pling time	concentra- tion	
acetone	67-64-1	Acetone	Urine	End of shift (As soon as possible after exposure ceases)	25 mg/l	ACGIH BEI

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.

Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory.

Examples of sources of recommended exposure measurement methods are given below or contact the 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/

Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha.gov/

Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substanc-

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es http://www.hse.gov.uk/

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany http://www.dguv.de/inhalt/index.jsp

L'Institut National de Recherche et de Securité, (INRS), France http://www.inrs.fr/accueil

Engineering measures

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. Eye washes and showers for emergency use.

Firewater monitors and deluge systems are recommended. Where material is heated, sprayed or mist formed, there is greater potential for airborne concentrations to be generated. 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:

General Information

Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping.

Define procedures for safe handling and maintenance of controls.

Educate and train workers in the hazards and control measures relevant to normal activities associated with this product.

Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.

Drain down system prior to equipment break-in or maintenance.

Retain drain downs in sealed storage pending disposal or subsequent recycle.

Personal protective equipment

Respiratory protection

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. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus.

Where air-filtering respirators are suitable, select an appropriate combination of mask and filter.

If air-filtering respirators are suitable for conditions of use: Select a filter suitable for organic gases and vapours [Type AX boiling point ≤65°C (149°F)].

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Hand protection Remarks

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. Longer term protection: butylrubber Gloves For continuous contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same but recognize that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time maybe acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers. Contaminated gloves should be replaced. Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a nonperfumed moisturizer is recommended.

Eye protection : Wear goggles for use against liquids and gas.

Wear full face shield if splashes are likely to occur.

Skin and body protection : Skin protection not ordinarily required beyond standard issue

work clothes.

It is good practice to wear chemical resistant gloves.

Protective measures : Personal protective equipment (PPE) should meet recom-

mended national standards. Check with PPE suppliers.

Thermal hazards : Not applicable

Environmental exposure controls

General advice : Local guidelines on emission limits for volatile substances

must be observed for the discharge of exhaust air containing

vapour.

Minimise release to the environment. An environmental assessment must be made to ensure compliance with local envi-

ronmental legislation.

Information on accidental release measures are to be found in

section 6.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : Liquid.

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Colour clear

Odour characteristic

Odour Threshold : Data not available

Not applicable pΗ

-94 °C / -137 °F Melting / freezing point

Boiling point : 56 °C / 133 °F

: -18 °C / -0.40 °F Flash point

Method: IP 170

Evaporation rate : 5.6

Method: ASTM D 3539, nBuAc=1

Method: DIN 53170, di-ethyl ether=1

Flammability

Flammability (solid, gas) Not applicable

Lower explosion limit and upper explosion limit / flammability limit

Upper explosion limit / Up- : ca. 13 %(V)

per flammability limit

Lower explosion limit / Lower flammability limit : ca. 2.1 %(V)

Vapour pressure 24.7 kPa (20 °C / 68 °F)

Relative vapour density 2 (20 °C / 68 °F)

0.792 (15 °C / 59 °F) Relative density

Method: ASTM D4052

Density 790 - 792 kg/m3 (20 °C / 68 °F)

Method: ASTM D4052

Solubility(ies)

Water solubility Completely miscible. (20 °C / 68 °F

)

Solubility in other solvents : Data not available

Partition coefficient: n-

octanol/water

log Pow: 0.2

540 °C / 1004 °F Auto-ignition temperature

Method: ASTM D-2155

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Decomposition temperature : Data not available

Viscosity

Viscosity, dynamic : 0.33 mPa.s (20 °C / 68 °F)

Method: ASTM D445

Viscosity, kinematic : Data not available

Explosive properties : Not applicable

Oxidizing properties : Data not available

Surface tension : 22.8 mN/m

Conductivity: > 10,000 pS/m

A number of factors, for example liquid temperature, presence of contaminants, and anti-static additives can greatly influence the conductivity of a liquid, This material is not expected to be

a static accumulator.

Molecular weight : 58.08 g/mol

Particle size : Data not available

SECTION 10. STABILITY AND REACTIVITY

Reactivity : The product does not pose any further reactivity hazards in

addition to those listed in the following sub-paragraph.

Chemical stability : No hazardous reaction is expected when handled and stored

according to provisions

Possibility of hazardous reac-

tions

Reacts with strong oxidising agents.

Conditions to avoid : Avoid heat, sparks, open flames and other ignition sources.

Prevent vapour accumulation.

In certain circumstances product can ignite due to static elec-

tricity.

Incompatible materials : Strong oxidising agents.

Hazardous decomposition

products

 Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases including carbon monoxide, carbon dioxide, sulphur oxides and

unidentified organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degra-

dation.

SECTION 11. TOXICOLOGICAL INFORMATION

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Basis for assessment : Information given is based on product testing.

Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual com-

ponent(s).

Information on likely routes of exposure

Acute toxicity

Components:

acetone:

Acute oral toxicity : LD 50 (Rat, female): > 5,000 mg/kg

Method: Literature data

Remarks: Based on available data, the classification criteria

are not met.

Acute inhalation toxicity : LC 50 (Rat, female): > 20 mg/l

Exposure time: 4 h Test atmosphere: vapour Method: Literature data

Remarks: Based on available data, the classification criteria

are not met.

High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.

Acute dermal toxicity : LD 50 (Rabbit, male and female): > 5,000 mg/kg

Method: Literature data

Remarks: Based on available data, the classification criteria

are not met.

Benzene:

Acute oral toxicity : LD 50 (Rat, male): > 2,000 mg/kg

Method: Test(s) equivalent or similar to OECD Test Guideline

401

Remarks: Based on available data, the classification criteria

are not met.

Acute inhalation toxicity : LC 50 (Rat, female): > 20 mg/l

Exposure time: 4 h
Test atmosphere: vapour

Method: Test(s) equivalent or similar to OECD Test Guideline

403

Remarks: Based on available data, the classification criteria

are not met.

High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued inhalation may result in unconsciousness and/or death.

Acute dermal toxicity : LD 50 (Rabbit): > 2,000 mg/kg

Method: Test(s) equivalent or similar to OECD Test Guideline

402

Remarks: Based on available data, the classification criteria

are not met.

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Skin corrosion/irritation

Components:

acetone:

Species: Rabbit

Method: Literature data

Remarks: Based on available data, the classification criteria are not met., Prolonged/repeated

contact may cause defatting of the skin which can lead to dermatitis.

Benzene:

Species: Rabbit

Method: OECD Test Guideline 404 Remarks: Causes skin irritation.

Serious eye damage/eye irritation

Components:

acetone:

Species: Rabbit

Method: Test(s) equivalent or similar to OECD Test Guideline 405

Remarks: Causes serious eye irritation.

Benzene:

Species: Rabbit

Method: Literature data

Remarks: Causes serious eye irritation.

Respiratory or skin sensitisation

Components:

acetone:

Species: Guinea pig Method: Literature data

Remarks: Based on available data, the classification criteria are not met.

Benzene:

Species: Mouse

Method: Literature data

Remarks: Based on available data, the classification criteria are not met.

Germ cell mutagenicity

Components:

acetone:

Genotoxicity in vitro : Method: Test(s) equivalent or similar to OECD Guideline 471

Remarks: Based on available data, the classification criteria

are not met.

: Method: Test(s) equivalent or similar to OECD Test Guideline

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Remarks: Based on available data, the classification criteria

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are not met.

: Method: Test(s) equivalent or similar to OECD Test Guideline

476

Remarks: Based on available data, the classification criteria

are not met.

Genotoxicity in vivo : Test species: Mouse

Method: Literature data

Remarks: Based on available data, the classification criteria

are not met.

Test species: Hamster Method: Literature data

Remarks: Based on available data, the classification criteria

are not met.

Germ cell mutagenicity- As-

sessment

This product does not meet the criteria for classification in

categories 1A/1B.

Benzene:

Genotoxicity in vitro : Method: OECD Test Guideline 471

Remarks: May cause genetic defects.

: Method: Other guideline method. Remarks: May cause genetic defects.

: Method: Literature data

Remarks: May cause genetic defects.

Genotoxicity in vivo : Test species: Mouse

Method: Test(s) equivalent or similar to OECD Test Guideline

474

Remarks: May cause genetic defects.

Germ cell mutagenicity- As-

sessment

: May cause genetic defects.

Carcinogenicity

Components:

acetone:

Species: Mouse, (female) Application Route: Dermal Method: Literature data

Remarks: Based on available data, the classification criteria are not met.

Carcinogenicity - Assess-

ment

: This product does not meet the criteria for classification in

categories 1A/1B.

Benzene:

Species: Rat, (male and female)

Application Route: Oral

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Method: Other guideline method.

Remarks: May cause cancer., Known human carcinogen., May cause leukaemia (AML - acute

myelogenous leukaemia).

Species: Mouse, (male and female) Application Route: Inhalation Method: Literature data

Remarks: May cause cancer., Known human carcinogen., May cause leukaemia (AML - acute

myelogenous leukaemia).

Carcinogenicity - Assess-

ment

: May cause cancer.

IARC No component of this product present at levels greater than or

equal to 0.1% is identified as probable, possible or confirmed

human carcinogen by IARC.

OSHANo component of this product present at levels greater than or

equal to 0.1% is on OSHA's list of regulated carcinogens.

NTP No component of this product present at levels greater than or

equal to 0.1% is identified as a known or anticipated carcinogen

by NTP.

Reproductive toxicity

Components:

acetone:

Effects on fertility

Species: Rat

Sex: male

Application Route: Oral

Method: Acceptable non-standard method.

Remarks: Based on available data, the classification criteria

are not met.

Effects on foetal develop-

ment

Species: Mouse, female

Application Route: Inhalation

Method: Test(s) equivalent or similar to OECD Test Guideline

414

Remarks: Based on available data, the classification criteria

are not met.

Reproductive toxicity - As-

sessment

: This product does not meet the criteria for classification in

categories 1A/1B.

Benzene:

Effects on fertility

Species: Rat

Sex: male and female

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Application Route: Inhalation

Method: Test(s) equivalent or similar to OECD Test Guideline

Remarks: Based on available data, the classification criteria

are not met.

Effects on foetal develop-

ment

Species: Rat, female

Application Route: Inhalation

Method: Test(s) equivalent or similar to OECD Test Guideline

Remarks: Based on available data, the classification criteria are not met., Causes foetotoxicity in animals at doses which

are maternally toxic.

Reproductive toxicity - As-

sessment

This product does not meet the criteria for classification in

categories 1A/1B.

STOT - single exposure

Components:

acetone:

Exposure routes: Inhalation

Target Organs: Central nervous system Remarks: May cause drowsiness or dizziness.

Benzene:

Remarks: Based on available data, the classification criteria are not met., Inhalation of vapours or mists may cause irritation to the respiratory system.

STOT - repeated exposure

Components:

acetone:

Remarks: Based on available data, the classification criteria are not met., 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 Tetra chloro hydrocarbon.

Benzene:

Exposure routes: Oral, Inhalation Target Organs: hematopoietic system

Remarks: Causes damage to organs through prolonged or repeated exposure., Blood-forming organs: repeated exposure affects the bone marrow., Blood: may cause haemolysis of red blood cells and/or anaemia., Immune System: animal studies on this material or its components have demonstrated immunotoxicity., May cause MDS (Myelodysplastic Syndrome)., Exposure to very high concentrations of similar materials has been associated with irregular heart rhythms and cardiac arrest.. Myelodysplastic syndrome (MDS) was observed in individuals exposed to very high levels (50 ppm to 300 ppm range) of benzene over a long period of time in the workplace.

The relevance of these results to lower levels of exposure is not known.

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Repeated dose toxicity

Components:

acetone:

Species: Rat, male and female Application Route: Oral

Method: Test(s) equivalent or similar to OECD Test Guideline 408

Target Organs: No specific target organs noted

Species: Rat, male

Application Route: Inhalation Test atmosphere: vapour Method: Literature data

Target Organs: No specific target organs noted

Benzene:

Species: Rat, male and female Application Route: Oral

Method: Test(s) equivalent or similar to OECD Test Guideline 408

Target Organs: hematopoietic system

Species: Mouse, male and female Application Route: Inhalation Test atmosphere: vapour Method: Literature data

Target Organs: hematopoietic system

Aspiration toxicity

Components:

acetone:

Based on available data, the classification criteria are not met.

Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.

Benzene:

May be fatal if swallowed and enters airways.

Aspiration into the lungs when swallowed or vomited may cause chemical pneumonitis which can be fatal.

Further information

Components:

acetone:

Remarks: Classifications by other authorities under varying regulatory frameworks may exist.

Benzene:

Remarks: Classifications by other authorities under varying regulatory frameworks may exist.

SECTION 12. ECOLOGICAL INFORMATION

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Basis for assessment : Ecotoxicological data are based on product testing.

Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual com-

ponent(s).

Ecotoxicity

Components:

acetone:

Toxicity to fish (Acute toxici-

ty)

LC50 (Pimephales promelas (fathead minnow)): 6,210 mg/l

Exposure time: 96 h

Method: Test(s) equivalent or similar to OECD Guideline 203

Remarks: Practically non toxic:

LL/EL/IL50 > 100 mg/l

Toxicity to daphnia and other : aquatic invertebrates (Acute

toxicity)

LC50 (Daphnia pulex (Water flea)): 8,800 mg/l

Exposure time: 48 h

Method: Other guideline method. Remarks: Practically non toxic:

LL/EL/IL50 > 100 mg/l

Toxicity to algae (Acute tox-

icity)

NOEC (Microcystis aeruginosa (blue-green algae)): 530 mg/l

Exposure time: 192 h

Method: Other guideline method. Remarks: Practically non toxic:

LL/EL/IL50 > 100 mg/l

Toxicity to fish (Chronic tox-

icity)

Remarks: Data not available

Toxicity to daphnia and other : aquatic invertebrates (Chron-

ic toxicity)

NOEC (Daphnia magna (Water flea)): 2,212 mg/l

Exposure time: 28 d

Method: Test(s) equivalent or similar to OECD Guideline 211

Remarks: NOEC/NOEL > 100 mg/l

Toxicity to microorganisms

(Acute toxicity)

EC50: 61,150 mg/l Exposure time: 0.5 h

Method: Other guideline method. Remarks: Practically non toxic:

LL/EL/IL50 > 100 mg/l

Benzene:

Toxicity to fish (Acute toxici-

ty)

LC50 (Oncorhynchus mykiss (rainbow trout)): 5.3 mg/l

Exposure time: 96 h

Method: Test(s) equivalent or similar to OECD Guideline 203

Remarks: Toxic

 $LL/EL/IL50 > 1 \le 10 \text{ mg/l}$

Toxicity to daphnia and other : aquatic invertebrates (Acute

toxicity)

EC50 (Daphnia magna (Water flea)): 10 mg/l

Exposure time: 48 h

Method: OECD Test Guideline 202

Remarks: Toxic

 $LL/EL/IL50 > 1 \le 10 \text{ mg/l}$

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Toxicity to algae (Acute tox-

icity)

ErC50 (Selenastrum capricornutum (green algae)): 100 mg/l

Exposure time: 72 h

Method: OECD Test Guideline 201

Remarks: Harmful

LL/EL/IL50 >10 <= 100 mg/l

Toxicity to fish (Chronic tox-

icity)

NOEC (Pimephales promelas (fathead minnow)): 0.8 mg/l

Exposure time: 32 d

Method: Other guideline method.

Remarks: NOEC/NOEL > 0.1 - <=1.0 mg/l

Toxicity to daphnia and other : aquatic invertebrates (Chron-

ic toxicity)

NOEC (Ceriodaphnia dubia (Water flea)): 3 mg/l

Exposure time: 7 d

Method: Other guideline method.

Remarks: NOEC/NOEL > 1.0 - <= 10 mg/l

Toxicity to microorganisms

(Acute toxicity)

IC50 (Nitrosomonas): 13 mg/l

Exposure time: 24 h Method: Literature data. Remarks: Harmful

LL/EL/IL50 >10 <= 100 mg/l

Persistence and degradability

Components:

acetone:

Biodegradability : Biodegradation: 90.9 %

Exposure time: 28 d

Method: Test(s) equivalent or similar to OECD Guideline 301

В

Remarks: Readily biodegradable.

Benzene:

Biodegradability : Biodegradation: 96 %

Exposure time: 28 d

Method: OECD Test Guideline 301F Remarks: Readily biodegradable. Not Persistent per IMO criteria.

International Oil Pollution Compensation (IOPC) Fund definition: "A non-persistent oil is oil, which, at the time of shipment, consists of hydrocarbon fractions, (a) at least 50% of which, by volume, distills at a temperature of 340°C (645°F) and (b) at least 95% of which, by volume, distils at a temperature of 370°C (700°F) when tested by the ASTM Method D-86/78 or

any subsequent revision thereof."

Bioaccumulative potential

Components:

acetone:

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Bioaccumulation : Remarks: Does not bioaccumulate significantly.

Benzene:

Bioaccumulation : Species: Leuciscus idus (Golden orfe)

Bioconcentration factor (BCF): < 10

Exposure time: 3 d

Method: Test(s) equivalent or similar to OECD Test Guideline

305

Remarks: Does not bioaccumulate significantly.

Mobility in soil

Components:

acetone:

Mobility : Remarks: If product enters soil, it will be mobile and may con-

taminate groundwater. Dissolves in water.

Benzene:

Mobility : Remarks: Floats on water.

Other adverse effects

Components:

acetone:

Results of PBT and vPvB

assessment

The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not consid-

ered to be PBT or vPvB.

Benzene:

Results of PBT and vPvB

assessment

The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not consid-

ered to be PBT or vPvB.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : 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 meth-

ods in compliance with applicable regulations.

Do not dispose into the environment, in drains or in water

courses.

Waste product should not be allowed to contaminate soil or ground water, or be disposed of into the environment. Waste, spills or used product is dangerous waste.

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Disposal should be in accordance with applicable regional,

national, and local laws and regulations.

Local regulations may be more stringent than regional or na-

tional requirements and must be complied with.

MARPOL - see International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) which provides tech-

nical aspects at controlling pollutions from ships.

Contaminated packaging : 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.

Dispose in accordance with prevailing regulations, preferably to a recognized collector or contractor. The competence of the collector or contractor should be established beforehand.

SECTION 14. TRANSPORT INFORMATION

National Regulations

49 CFR

UN/ID/NA number : UN 1090 Proper shipping name : ACETONE

Class : 3
Packing group : II
Labels : 3

Reportable quantity ACETONE

(5,000 lb)

ERG Code : 127 Marine pollutant : no

International Regulations

IATA-DGR

UN/ID No. : UN 1090 Proper shipping name : ACETONE

Class : 3
Packing group : II
Labels : 3

IMDG-Code

UN number : UN 1090 Proper shipping name : ACETONE

Class : 3
Packing group : II
Labels : 3
Marine pollutant : no

Maritime transport in bulk according to IMO instruments

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Pollution category : Z Ship type : 3

Product name : Acetone

Special precautions for user

Remarks : Special Precautions: Refer to Section 7, Handling & Storage,

for special precautions which a user needs to be aware of or

needs to comply with in connection with transport.

Additional Information: This product may be transported under nitrogen blanketing.

Nitrogen is an odourless and invisible gas. Exposure to nitrogen enriched atmospheres displaces available oxygen which may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a confined space

entry.

SECTION 15. REGULATORY INFORMATION

EPCRA - Emergency Planning and Community Right-to-Know Act

CERCLA Reportable Quantity

Components	CAS-No.	Component RQ	Calculated product RQ	
		(lbs)	(lbs)	
acetone	67-64-1	5000	5000	
acetone	67-64-1	100	100 (F003)	
Benzene	71-43-2	10	10 (D018)	

^{*:} The components with RQs are given for information.

SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

SARA 311/312 Hazards : Flammable (gases, aerosols, liquids, or solids)

Serious eye damage or eye irritation

Specific target organ toxicity (single or repeated exposure)

SARA 313 : This material does not contain any chemical components with

known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Water Act

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

Benzene 71-43-2 0.003 %

US State Regulations

Pennsylvania Right To Know

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California Prop. 65

WARNING: This product can expose you to chemicals including Benzene, which is/are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

California List of Hazardous Substances

acetone 67-64-1

Other regulations:

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

The components of this product are reported in the following inventories:

AIIC : Listed

DSL : Listed

IECSC : Listed

ENCS : Listed

KECI : Listed

NZIoC : Listed

PICCS : Listed

TSCA : Listed

TCSI : Listed

SECTION 16. OTHER INFORMATION

Further information

NFPA Rating (Health, Fire, Reac- 2, 3, 0

tivity)

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
ACGIH BEI : ACGIH - Biological Exposure Indices (BEI)

OSHA CARC : OSHA Specifically Regulated Chemicals/Carcinogens
OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Lim-

its for Air Contaminants

OSHA Z-2 : USA. Occupational Exposure Limits (OSHA) - Table Z-2

ACGIH / TWA : 8-hour, time-weighted average
ACGIH / STEL : Short-term exposure limit
OSHA CARC / PEL : Permissible exposure limit (PEL)

OSHA CARC / STEL : Excursion limit

OSHA Z-1 / TWA : 8-hour time weighted average

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OSHA Z-2 / TWA : 8-hour time weighted average OSHA Z-2 / CEIL : Acceptable ceiling concentration

OSHA Z-2 / Peak : Acceptable maximum peak above the acceptable ceiling con-

centration for an 8-hr shift

Abbreviations and Acronyms : The standard abbreviations and acronyms used in this docu-

ment can be looked up in reference literature (e.g. scientific

dictionaries) and/or websites.

ACGIH = American Conference of Governmental Industrial

Hygienists

ADR = European Agreement concerning the International

Carriage of Dangerous Goods by Road

AICS = Australian Inventory of Chemical Substances ASTM = American Society for Testing and Materials

BEL = Biological exposure limits

BTEX = Benzene, Toluene, Ethylbenzene, Xylenes

CAS = Chemical Abstracts Service

CEFIC = European Chemical Industry Council CLP = Classification Packaging and Labelling

COC = Cleveland Open-Cup

DIN = Deutsches Institut fur Normung DMEL = Derived Minimal Effect Level DNEL = Derived No Effect Level

DSL = Canada Domestic Substance List

EC = European Commission EC50 = Effective Concentration fifty

ECETOC = European Center on Ecotoxicology and Toxicolo-

gy Of Chemicals

ECHA = European Chemicals Agency

EINECS = The European Inventory of Existing Commercial

Chemical Substances

EL50 = Effective Loading fifty

ENCS = Japanese Existing and New Chemical Substances

Inventory

EWC = European Waste Code

GHS = Globally Harmonised System of Classification and

Labelling of Chemicals

IARC = International Agency for Research on Cancer

IATA = International Air Transport Association

IC50 = Inhibitory Concentration fifty

IL50 = Inhibitory Level fifty

IMDG = International Maritime Dangerous Goods

INV = Chinese Chemicals Inventory

IP346 = Institute of Petroleum test method N° 346 for the determination of polycyclic aromatics DMSO-extractables

KECI = Korea Existing Chemicals Inventory

LC50 = Lethal Concentration fifty LD50 = Lethal Dose fifty per cent.

LL/EL/IL = Lethal Loading/Effective Loading/Inhibitory loading

LL50 = Lethal Loading fifty

MARPOL = International Convention for the Prevention of

Pollution From Ships

NOEC/NOEL = No Observed Effect Concentration / No Ob-

served Effect Level

OE_HPV = Occupational Exposure - High Production Volume

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PBT = Persistent, Bioaccumulative and Toxic

PICCS = Philippine Inventory of Chemicals and Chemical

Substances

PNEC = Predicted No Effect Concentration

REACH = Registration Evaluation And Authorisation Of

Chemicals

RID = Regulations Relating to International Carriage of Dan-

gerous Goods by Rail

SKIN_DES = Skin Designation STEL = Short term exposure limit TRA = Targeted Risk Assessment

TSCA = US Toxic Substances Control Act

TWA = Time-Weighted Average

vPvB = very Persistent and very Bioaccumulative

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

Sources of key data used to compile the Safety Data

Sheet

The quoted data are from, but not limited to, one or more sources of information (e.g. toxicological data from Shell Health Services, material suppliers' data, CONCAWE, EU

IUCLID date base, EC 1272 regulation, etc).

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The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

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