

# SAFETY DATA SHEET

In accordance with Occupational Safety and Health Act's Standard of Classification and Labelling of Chemical Substances and MSDS

## Acetone

Version 3.0

Revision Date 2022.08.04

MSDS number 5380  
Print Date 2022.09.28

### 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Acetone  
Product code : S1212, S1260, U8903  
Synonyms : Dimethyl Ketone, propan-2-one, 2-Propanone  
CAS-No. : 67-64-1

Recommended use of the chemical and restrictions on use

Recommended use : Industrial Solvent.

Restrictions on use : Restricted to professional users.

#### Manufacturer or supplier's details

Supplier : SHELL EASTERN CHEMICALS (S)  
A REGISTERED BUSINESS OF SHELL EASTERN  
TRADING (PTE) LTD (UEN:198902087C)  
9 North Buona Vista Drive , #07-01  
The Metropolis Tower 1  
Singapore 138588  
Singapore  
Telephone : + 82 2 360 1169  
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Contact for Safety Data : sccmsds@shell.com  
Sheet

Emergency telephone : + (65) 6542 9595 (Alert-SGS)  
number

Organization that prepared : JOIN International Ltd. (JIL)  
the SDS : Samsung Cheil Bldg., 18th Fl,  
309, Tereran-ro, Gangnam-gu,  
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### 2. HAZARDS IDENTIFICATION

#### GHS Classification

Flammable liquids : Category 2  
Aspiration hazard : Category 2  
Eye irritation : Category 2A  
Specific target organ toxicity - : Category 3

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single exposure

### GHS label elements

Hazard pictograms



Signal word

: Danger

Hazard statements

: PHYSICAL HAZARDS:  
H225 Highly flammable liquid and vapour.  
HEALTH HAZARDS:  
H305 May be harmful if swallowed and enters airways.  
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.  
P302 + P310 IF ON SKIN: Immediately call a POISON CENTER/ doctor.  
P331 Do NOT induce vomiting.  
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:

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P403 + P233 Store in a well-ventilated place. Keep container tightly closed. P235 Keep cool. P405 Store locked up.		
<b>Disposal:</b> P501 Dispose of contents and container to appropriate waste site or reclaimer in accordance with local and national regulations.		

### 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 air-vapour mixtures can occur. Exposure may enhance the toxicity of other materials. Repeated exposure may cause skin dryness or cracking. Slightly irritating to respiratory system.

NFPA Rating (Health, Fire, Reactivity) : 2, 3, 0

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

#### Components

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

### 4. FIRST-AID MEASURES

General advice	: Not expected to be a health hazard when used under normal conditions.
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 treatment.
In case of skin contact	: Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available. If persistent irritation occurs, obtain medical attention.

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If inhaled	: Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.
If swallowed	: 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. 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, light-headedness, headache, nausea and loss of coordination. Continued inhalation may result in unconsciousness and death. No specific hazards under normal use conditions. Skin irritation signs and symptoms may include a burning sensation, redness, or swelling. 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. 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 burning 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.
Notes to physician	: Treat symptomatically. IMMEDIATE TREATMENT IS EXTREMELY IMPORTANT! Call a doctor or poison control center for guidance. Potential for chemical pneumonitis.

### 5. FIRE-FIGHTING MEASURES

Suitable and unsuitable extinguishing media

Suitable extinguishing media : Alcohol-resistant foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only.

Unsuitable extinguishing media : None

Specific hazards during : The vapour is heavier than air, spreads along the ground and

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firefighting	distant ignition is possible. Carbon monoxide may be evolved if incomplete combustion occurs.	
Specific extinguishing methods	: Standard procedure for chemical fires. 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).	

### 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	: Observe the relevant local and international regulations 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. 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 unprotected 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

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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.

### 7. HANDLING AND STORAGE

General Precautions : 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 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.

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 flammable.  
Properly dispose of any contaminated rags or cleaning materials in order to prevent fires.  
Do NOT use compressed air for filling, discharging, or handling operations.

Avoidance of contact : Strong oxidising agents.

Product Transfer : Refer to guidance under Handling section.

#### Safe storage methods (including conditions to be avoided)

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 covering the packaging and storage of this product.

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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 storage 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

## 8. EXPOSURE CONTROLS AND 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	500 ppm	KR OEL
acetone		STEL	750 ppm	KR OEL
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
acetone		TWA	250 ppm 590 mg/m3	NIOSH REL
Benzene	71-43-2	TWA	0.5 ppm	KR OEL
	Further information: Sufficient evidence of carcinogenicity in humans, Substances which should be regarded as if they induce heritable mutations in the germ cells of humans, Substances designated by 'Skin' may be absorbed into the bloodstream through the skin, mucous membrane and eye and contribute to the overall effect. (Skin notation does not apply to the skin irritant)			
Benzene		STEL	2.5 ppm	KR OEL
	Further information: Sufficient evidence of carcinogenicity in humans, Substances which should be regarded as if they induce heritable mutations in the germ cells of humans, Substances designated by 'Skin' may be absorbed into the bloodstream through the skin, mucous membrane and eye and contribute to the overall effect. (Skin notation does not apply to the skin irritant)			
Benzene		TWA	0.5 ppm	KR PEL
Benzene		STEL	2.5 ppm	KR PEL
Benzene	71-43-2	TWA	0.25 ppm	Shell Internal

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			0.8 mg/m3	Standard (SIS) for 8-12 hour TWA.
Benzene		STEL	2.5 ppm 8 mg/m3	Shell Internal Standard (SIS) for 15 min (STEL)
Benzene	71-43-2	STEL	2.5 ppm	ACGIH
Benzene	71-43-2	TWA	0.05 ppm	ACGIH
Benzene	71-43-2	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	OSHA Z-2

### Biological occupational exposure limits

No biological limit allocated.

### 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 Substances <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 Sécurité, (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:



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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

#### Protective measures

Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.

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  $\leq 65^{\circ}\text{C}$  ( $149^{\circ}\text{F}$ )].

Eye protection : Wear goggles for use against liquids and gas. Wear full face shield if splashes are likely to occur.

Hand protection : 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: butyl-rubber 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

Remarks

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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 non-perfumed moisturizer is recommended.

- Skin and body protection : Skin protection not ordinarily required beyond standard issue work clothes.  
It is good practice to wear chemical resistant gloves.
- 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 environmental legislation.  
Information on accidental release measures are to be found in section 6.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance : Liquid.
- Colour : clear
- Odour : characteristic
- Odour Threshold : Data not available
- pH : Not applicable
- Melting / freezing point : -94 °C / -137 °F
- Boiling point : 56 °C / 133 °F
- Flash point : -18 °C / -0.40 °F  
Method: IP 170
- Evaporation rate : 5.6  
Method: ASTM D 3539, nBuAc=1

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Method: DIN 53170, di-ethyl ether=1

Flammability (solid, gas) : Not applicable

Upper/Lower explosion limit

Upper explosion limit : ca. 13 %(V)

Lower explosion limit : ca. 2.1 %(V)

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

Solubility(ies)

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

Solubility in other solvents : Data not available

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

Relative density : 0.792 (15 °C / 59 °F)  
Method: ASTM D4052

Density : 790 - 792 kg/m<sup>3</sup> (20 °C / 68 °F)  
Method: ASTM D4052

Partition coefficient: n-octanol/water : log Pow: 0.2

Auto-ignition temperature : 540 °C / 1004 °F  
Method: ASTM D-2155

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

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Conductivity	: Electrical 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.	
Particle size	: Data not available	
Molecular weight	: 58.08 g/mol	

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### 10. STABILITY AND REACTIVITY

Chemical stability and possibility of hazardous reactions:

- : The product does not pose any further reactivity hazards in addition to those listed in the following sub-paragraph.  
No hazardous reaction is expected when handled and stored according to provisions  
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 electricity.

- 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 degradation.

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### 11. TOXICOLOGICAL INFORMATION

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

#### Health hazard information

##### 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

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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.

### **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.

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### **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.

### **Carcinogenicity**

#### **Components:**

##### **acetone:**

Species: Mouse, (female)  
Application Route: Dermal  
Method: Literature data  
Remarks: Based on available data, the classification criteria are not met.

Carcinogenicity - Assessment : This product does not meet the criteria for classification in categories 1A/1B.

### **Benzene:**

Species: Rat, (male and female)  
Application Route: Oral  
Method: Other guideline method.  
Remarks: May cause cancer., Known human carcinogen., May cause leukaemia (AML - acute myelogenous leukaemia).

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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 - Assessment : May cause cancer.

Material	GHS/CLP Carcinogenicity Classification
acetone	No carcinogenicity classification.
Benzene	Carcinogenicity Category 1A

Material	Other Carcinogenicity Classification
Benzene	IARC: Group 1: Carcinogenic to humans

### 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 473  
Remarks: Based on available data, the classification criteria 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.

: Test species: MouseMethod: Literature data  
Remarks: Based on available data, the classification criteria are not met.

Test species: HamsterMethod: Literature data  
Remarks: Based on available data, the classification criteria are not met.

Germ cell mutagenicity-Assessment : 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

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Remarks: May cause genetic defects.

: Test species: Mouse  
Method: Test(s) equivalent or similar to OECD Test Guideline 474  
Remarks: May cause genetic defects.

Germ cell mutagenicity-  
Assessment

: May cause genetic defects.

### Reproductive toxicity

#### Components:

##### acetone:

: 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  
development

: 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 -  
Assessment

: This product does not meet the criteria for classification in categories 1A/1B.

##### Benzene:

Species: Rat  
Sex: male and female  
Application Route: Inhalation

Method: Test(s) equivalent or similar to OECD Test Guideline 415.  
Remarks: Based on available data, the classification criteria are not met.

Species: Rat, 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., Causes foetotoxicity in animals at doses which are maternally toxic.

Reproductive toxicity -  
Assessment

: This product does not meet the criteria for classification in categories 1A/1B.



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### 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.

### Repeated dose toxicity

#### Components:

##### **acetone:**

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

Rat, male:

Application Route: Inhalation

Test atmosphere: vapour

Method: Literature data

Target Organs: No specific target organs noted

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### **Benzene:**

Rat, male and female:

Application Route: Oral

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

Target Organs: hematopoietic system

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.

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## **12. ECOLOGICAL INFORMATION**

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

### **Ecotoxicity**

#### **Components:**

##### **acetone :**

Toxicity to fish (Acute toxicity)

: 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:

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Toxicity to crustacean (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/aquatic plants (Acute toxicity)	: 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 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
Toxicity to fish (Chronic toxicity)	: Remarks: Data not available
Toxicity to crustacean(Chronic toxicity)	: NOEC: 2,212 mg/l Exposure time: 28 d Species: Daphnia magna (Water flea) Method: Test(s) equivalent or similar to OECD Guideline 211 Remarks: NOEC/NOEL > 100 mg/l

### Benzene :

Toxicity to fish (Acute toxicity)	: 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 <= 10 mg/l
Toxicity to crustacean (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 <= 10 mg/l
Toxicity to algae/aquatic plants (Acute toxicity)	: 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 microorganisms (Acute toxicity)	: IC50 (Nitrosomonas): 13 mg/l Exposure time: 24 h Method: Literature data. Remarks: Harmful LL/EL/IL50 >10 <= 100 mg/l
Toxicity to fish (Chronic	: NOEC: 0.8 mg/l

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toxicity)	Exposure time: 32 d Species: Pimephales promelas (fathead minnow) Method: Other guideline method. Remarks: NOEC/NOEL > 0.1 - <=1.0 mg/l	
Toxicity to crustacean(Chronic toxicity)	: NOEC: 3 mg/l Exposure time: 7 d Species: Ceriodaphnia dubia (Water flea) Method: Other guideline method. Remarks: NOEC/NOEL > 1.0 - <= 10 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 B  
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, distills at a temperature of 370°C (700°F) when tested by the ASTM Method D-86/78 or any subsequent revision thereof."

### Bioaccumulative potential

#### Product:

Partition coefficient: n-octanol/water : log Pow: 0.2

#### Components:

##### acetone :

Bioaccumulation : Remarks: Does not bioaccumulate significantly.

##### Benzene :

Bioaccumulation : Species: Leuciscus idus (Golden orfe)  
Exposure time: 3 d  
Bioconcentration factor (BCF): < 10  
Method: Test(s) equivalent or similar to OECD Test Guideline 305  
Remarks: Does not bioaccumulate significantly.

### Mobility in soil

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### Components:

#### **acetone :**

Mobility : Remarks: If product enters soil, it will be mobile and may contaminate 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 considered 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 considered to be PBT or vPvB.

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## 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 methods 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.

Disposal should be in accordance with applicable regional, national, and local laws and regulations.  
Local regulations may be more stringent than regional or national requirements and must be complied with.

MARPOL - see International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) which provides technical 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 uncanceled drums.  
Send to drum recoverer or metal reclaimers.

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

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### Disposal considerations

Dispose of in accordance with local regulations.

## 14. TRANSPORT INFORMATION

### National Regulations

Refer to section 15 for specific national regulation.

### International Regulations

#### ADR

UN number : 1090  
Proper shipping name : ACETONE  
Class : 3  
Packing group : II  
Labels : 3  
Hazard Identification Number : 33  
Environmentally hazardous : no

#### 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

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

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confined space entry.

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### 15. REGULATORY INFORMATION

#### National regulatory information

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

INDUSTRY SAFETY & HEALTH ACT:	Hazardous substances prohibited from manufacturing, etc., Not applicable
	Hazardous substances subject to authorization, Not applicable
	Hazardous substances subject to control, Applicable - Threshold $\geq 1\%$
	Substances established for exposure limits, Applicable
	Hazardous factor subject to keep below permissible limit, Not applicable
	Hazardous Factors Subject to Working Environment Monitoring, Applicable
	Hazardous Factors Subject to Special Medical Examination, Applicable
CHEMICALS CONTROL ACT:	Toxic chemical substances, Not applicable
	Authorization chemical substances, Not applicable
	Restricted chemical substances, Not applicable
	Prohibited chemical substances, Not applicable
	Accident precaution chemical substance, Not applicable
DANGEROUS GOODS SAFE CONTROL ACT:	Category/Classification of dangerous material; Category 4 Dangerous Goods (Flammable Liquids), Grade 1 petroleum chemicals
WASTES MANAGEMENT ACT:	Treat with Article 4/5/24/25 of Disposal

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Considerations Section.

### Other requirements in domestic and other countries

#### 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

## 16. OTHER INFORMATION

### Full text of other abbreviations

Aquatic Chronic	Long-term (chronic) aquatic hazard
Asp. Tox.	Aspiration hazard
Carc.	Carcinogenicity
Eye Irrit.	Eye irritation
Flam. Liq.	Flammable liquids
Muta.	Germ cell mutagenicity
Skin Irrit.	Skin irritation
STOT RE	Specific target organ toxicity - repeated exposure
STOT SE	Specific target organ toxicity - single exposure

### Abbreviations and Acronyms

AIIC - Australian Inventory of Industrial Chemicals; ANTT - National Agency for Transport by Land of Brazil; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing



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Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; n.o.s. - Not Otherwise Specified; Nch - Chilean Norm; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NOM - Official Mexican Norm; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TDG - Transportation of Dangerous Goods; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative; WHMIS - Workplace Hazardous Materials Information System

### Further information

Training advice : Provide adequate information, instruction and training for operators.

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 data base, EC 1272 regulation, etc).

Issuing date : 2010.06.25

### Revision number and date

Number of Revision : 3.0

Revision Date : 2022.08.04

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

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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