


Number: 023

Section 1. Product and Company Identification

Product name: Acetone
Synonyms: -
Recommended use and Restrictions on use: Chemicals (such as Methyl isobutyl ketone, Methyl isobutyl carbinol); methyl methacrylate; solvents of paint, lacquer, enamel paint, textile solvents of acetic acid cellulose; clearance and purification of precise devices; solvents of potassium iodide and potassium permanganate; meeting agents of acetic acid cellulose; test specification of products of rubber sulfate.
Manufacturer, Importer, or Supplier: Shiny Chemical Industrial Co., Ltd. Address: No.5, Yeong Gong 1 st Rd, Yeong An Dist., Kaohsiung 82841, Taiwan, R.O.C. Telephone: +886-7-8619171 ext. 711~714
Emergency telephone number: +886-7-8619171 ext. 711~714 Fax: +886-7-6222620

Section 2. Hazards Identification

Classification: 1. Flammable liquids, Category 2 2. Skin corrosive/irritation, Category 3 3. Serious eye damage/eye irritation, Category 2A 4. Aspiration hazard, Category 2
Label elements:  Hazard pictograms: Flame, Exclamation mark, Health hazard Signal word: Danger Hazard Statements: 1. Highly Flammable liquid and vapour. 2. Causes mild skin irritation. 3. Causes serious eye irritation. 4. May be harmful if swallowed and enters airways. Precautionary statements: 1. Keep containers in a well-ventilated place. 2. Keep away from sources of ignition - No Smoking. 3. If contacted with eyes, flush with plenty of water before seek for medical

attention.

Other Hazards: -

Section 3. Composition/Information on Ingredients

Pure substance

Chemical Name: Acetone

Synonyms: Dimethyl formaldehyde, Dimethylketal, Dimethyl ketone, Ketone propane, beta-Ketopropane, Methyl ketone, 2-Propanone, Pyroacrtic acid, Pyroacetic ether

CAS NO. : 67-64-1

Weight: 100%

Section 4. First Aid Procedures

Description of first aid measures:

- Inhalation:
 1. Remove contamination sources or move victims to fresh air.
 2. Get medical attention immediately if symptoms persist.
- Skin contact:
 1. Wash skin with warm water for at least 5 minutes until contamination removed.
- Eye contact:
 1. Immediately lift eyelids, flushing eyes with plenty of warm water for at least 20 minutes until contamination removed.
 2. Avoid flushing to the unaffected eye.
 3. Get medical attention immediately.
- Ingestion:
 1. Never give anything by mouth to victims will soon lose consciousness or lose consciousness already or with the convulsion.
 2. Have conscious victims gargle with water.
 3. Don't induce vomiting.
 4. Have victim drink 240~300 mL of water.
 5. Get medical attention immediately.

The most Important Symptoms and Hazardous Effects: The concentration higher than 2,000 ppm may cause somnolence, nausea, vomiting, drunken feeling and dizziness.

Protection for emergency personnel: Use appropriate personal protective equipment such as class C clothing to take first aid in a safety area.

Notes to Physicians: If swallowed, consider gastric lavage and activated carbon.

Section 5. Firefighting Measures

Suitable extinguishing media: Chemical dry, alcohol foam, carbon dioxide.

Special hazards during firefighting:

1. Flammable liquids with air may be ignited at room temperature.
2. Vapors heavier than air will propagate to distant places. It may cause flash back when meeting fire sources.
3. Vapors may accumulate in confined.
4. Containers in a fire scene may break or explode.
5. Even diluted with water, the solution may be ignited.

Firefighting procedures:

1. Evacuate and extinguish fire from safe distance or protected areas.
2. Place in windward areas to avoid dangerous vapor and poisonous decomposing materials.
3. Stop the leak first before extinguishing fire. Let it burn if leaks cannot be stopped and have on harm in surroundings. If extinguishing fire in advance without stopping leaks, vapors with the air will form explosive mixtures and ignite again.
4. Isolate unfired materials and protect personnel.
5. Move containers away from the fire scene in safe condition.
6. Cool exposed storage tanks or containers with water mist.
7. It may be invalid to extinguish fire with water mist but can dilute leaks and flush ignition sources away.
8. If leaks have not ignited, spray water mist to disperse vapors and protect the personnel stop spill.
9. It is invalid to extinguish fire with spouts.
10. Large fire of large-scale area, use auto-operated control shelf of water mist or auto-waved extinguishing water aims.
11. Evacuate from a fire scene as possible and let the fire burn thoroughly.
12. Keep away from storage tanks.
13. When safety valves of storage tanks alarm or change color, evacuate immediately.
14. Forbid personnel without special protective apparatus entering.

Protective equipment for firefighters: Extinguishing staffs should wear air respirators, extinguishing clothing, protective gloves.

Section 6. Accidental Release Measures

Personal precautions:

1. Restrain personnel close to the spill area before totally cleaning out.
2. Confirm the cleaning work be responsible by trained staffs.
3. Wear appropriate personal protective equipments.

Environmental precautions:

1. Ventilate this area.

2. Remove all sources of ignition.
3. Report to governmental safety and hygiene institutes and related units.

Methods for cleaning up:

1. Do not touch spilled material.
2. Avoid leaks flushing to sewers or confined areas.
3. Try to stop or reduce leaks in safety condition.
4. Use sand, soil, and inert absorbing agents to block leaks.
5. Small spill: Use the material, not react with spill, to absorb. Contaminated absorbing agents have same risk as spill. Place in covered and labeled containers. Spray water on spilled areas. Use plenty of water to dilute small spill.
6. Large spill: Contact fire control, urgent handling units and suppliers to seek aid.

Section 7. Handling and Storage

Handling:

1. This material is flammable and toxic liquid. Engineering control should be applied and make the best use of use personal protective equipments when handling. Educate risk of this material and safety training of use.
2. Remove all ignition sources away from heat and incompatible substances.
3. There should be a "No smoking" sign in workspace.
4. All barrels, containers, and pipelines must have earth connection and contact with naked metal.
5. When the operation of allocation is not in the airtight system, insure allocating containers, received-transporting apparatus and containers connected with same electric potential.
6. Empty tanks, containers, and pipelines may have risk residuals. Don't weld, cut, hole or do other heat work before clearing up.
7. Barrels or storage containers can be filled with the inert gas to reduce fire and explosion.
8. Use spark-resistant ventilation system in workplace. Apparatus should be the explosion-proof type.
9. Keep sidewalks and exports unimpeded.
10. Storage and large operating areas are considered to install fire and spill detection system, and appropriate automatic fire-fighting system or enough and useful emergency apparatus.
11. Avoid mist or vapors. Operate in well-ventilated assigned place and adopt the minimum consumption. Separate operation and storage areas.
12. Wear appropriate personal protective equipments to avoid contacting with this chemical or contaminated apparatus if necessary.
13. Don't use with incompatible substances (such as strong oxidants) to avoid

increasing risk of fire and explosion.

14. Use storage containers made of compatible substances. Package carefully to avoid spray out.
15. Don't use air or inert gas to pressurize and transport liquids from containers.
16. Unless allocating areas isolated with the fire-resistant structure, don't allocate and work in storage areas.
17. Use approved storage containers of flammable liquids and allocating apparatus.
18. Don't pour contaminated liquids back to original storage containers.
19. Containers should be labeled, confined and prevented from damage while not using.

Storage:

1. Store in shady, cool, dry, and well-ventilated place that sunshine cannot directly illuminate, and keep away from heat, ignition sources, and incompatible substances.
2. Consider to install leak-detection alarm system apparatus in storage areas.
3. Storage apparatus should be constructed with the refractory materials.
4. The floor should be constructed with the impermeable materials to avoid absorbing from the floor.
5. Keep storage areas away from workspace, lifts, building, room exits, and main passages.
6. Set slope, doorsill or dig grooves in an entrance to discharge spill to safe places.
7. Storage areas should be labeled clearly with no barriers. Permit assigned or trained personnel to enter.
8. Separate storage, refreshment, and protective apparatus areas.
9. Have appropriate fire extinguisher and leak cleaning apparatus near storage areas.
10. Check containers regularly whether damage or leak.
11. Check all new containers whether appropriately labeled and no damage.
12. Limit storage.
13. Store spill in containers made of compatible substances.
14. Storage tanks have earth connection and connected with other apparatus by using same electric potential.
15. Store in a small amount on the approved explosion-proof type refrigerator. Empty barrels may have risk residues. Those should be airtight and stored separately.
16. Install depressurizing and vacuum releasing valves in all barrels stored flammable liquids.
17. Store in accordance with the storage temperature suggested by chemical

- manufacturers or suppliers. Install warm-detecting sirens if necessary to alarm temperature is too high or too low.
18. Avoid storing large amount in room. Store in fireproofing isolating building as possible.
 19. Install flame-arrested devices in storage exhaust pipes.
 20. Storage tanks should be underground tanks. Seal whole area on the bottom to avoid seepage surrounded with liquid dikes, which can block the whole capacity.

Section 8. Exposure controls

Engineering controls:

1. Use spark-resistant and earth-connection ventilation system separately.
2. Direct outside exhaust vents.
3. Supply adequate fresh air to replenish the exhausted air.

Control parameters

TWA	STEL	CEILING	BEIs
200 ppm	250 ppm	-	50 mg/L (Ns)

Personal protective equipment:

- Respiratory protection:
 1. Blow 2,500 ppm: Chemical type with organic vapor filters, dynamical air purifying type, air-feed type, portable respiratory protective equipments.
 2. Unknown: Portable positive-pressure type respiratory protective equipments, positive-pressure full-and air-feed type respiratory protective equipments assisted by portable positive-pressure type.
 3. Escape: Mask with organic vapor filters, portable escape-type respiratory protective equipments.
- Hand protection: Leak-proof gloves. Glove materials of Butyl rubber, Teflon, 4H, Barricade, Chemrel, Responder, Trelchem, Tychem10000 are better.
- Eye protection: Chemical splash-proof goggles, masks (8 inch minimum).
- Skin and physical protection: Above rubber coveralls, work boots, eye-washers, and emergency showers.

Hygiene measures:

1. Remove contaminated clothing quickly as possible after work. Clean clothing before reuse or abandon. Tell cleaning staffs the harmfulness.
2. Forbid smoking or eating in workplace.
3. After handling this material, wash hands thoroughly.
4. Keep workplace clean.

Section 9. Physical and Chemical Properties

Appearance: Colorless liquids	Odor: Special sweet, mint smell
-------------------------------	---------------------------------

Odor threshold: 1. 3.6 ~ 653 ppm (monitor) 2. 33 ~ 699 ppm (censor)	Melting point: -94.6°C
pH: -	Boiling point/Boiling range: 56.2°C
Flammability (solid, gas): -	Flash point: -18°C
Decomposition temperature: -	Test method: close cup
Auto-ignition temperature: 465°C	Explosion limits: 2.5% ~ 12.8%
Vapor pressure: 180 mmHg	Vapor density: 2 (air=1)
Density: 0.791 (water=1)	Solubility: Soluble in water
Partition coefficient (n-octanol/water, log K _{ow}): -0.24	Volatility rate: 5.6 (N-butyl acetate=1)

Section 10. Stability and Reactivity

Chemical stability: Stable under ordinary conditions.
Possibility of hazardous reactions: 1. Oxidants (the salt such as peroxide, nitrate, perchlorate), strong reducing agents, chlorinated solvents and alkaline mixtures (such as the chloroform sodium hydroxide): Intense reaction increases fire and explosion risk. 2. Tertiary butanoic acid potassium, hexachloromelamine, sulfur dichloride: Intense reaction.
Conditions to avoid: Sparks, open flames, heat, ignition sources, long-term exposure to heat.
Materials to avoid: Oxidants, chlorinated solvents, alkaline reducing agents, alkaline mixtures, tertiary butanoic acid potassium, hexachloromelamine, sulfur dichloride strong reducing agents.
Hazardous decomposition products: Heat decomposes and produces carbon monoxide, carbon dioxide.

Section 11. Toxicological Information

Exposure Route: inhalation, Skin, eye, ingestion.
Symptoms: Headaches, faintness, tiredness, nausea, drunkenness, vomiting, collapse, skin degreasing, coma, dermatitis, position disorder.
Acute toxicity: • Inhalation: 1. Low-concentration has no acute effects. High-concentration (1,000 ppm) irritates nose and pharyngeal. 2. The concentration higher than 2,000 ppm may cause somnolence, nausea, vomiting, drunkenness and dizziness. 3. The concentration higher than 10,000 ppm may cause unconsciousness and

death.

- Skin:
 1. Direct exposure may cause slight irritation.
- Eyes:
 1. High-concentration (10,000 ppm) vapors will cause slight and transient irritation.
 2. The liquid has severe eye irritation.
- Ingestion:
 1. Irritate pharyngeal, esophagus, and stomach.
 2. Symptoms of large ingestion are similar to inhalation (headaches, faintness, tiredness).
 3. Inhalation will cause fatal lung injury.
- LD₅₀ (animal test, entry): 5,800 mg/kg (rat, oral)
- LC₅₀ (animal test, entry): 50,100 ppm/6 hour(s) (rat, inhalation)
- 500 mg/24 hour(s) (rabbit, skin): cause mild irritation.
- 20 mg/24 hour(s) (rabbit, eye): cause severe irritation.

Chronic / Long-term toxicity:

1. Long-term or frequent contact may cause skin degreasing and dermatitis (dry, irritation, ruddy and crack).
2. 1,000 ppm, 3 hours a day, will feel nose and pharyngeal irritation, position disorder, and weakness after exposure of 7 to 15 years.
3. Exposed to acetone will increase liver toxicity of chlorinated solvents, for example: 1,2-dichloroethylene, 1,1,2-trichloroethane, carbon tetrachloride, chloroform, trichloroethylene, ethylene dibromide, dibromoethane ethylene, etc. 31,500 µg/m³/24 hour(s) (mammal, inhalation) affects reproduction.

Section 12. Ecological Information

Ecological toxicity:

1. LC₅₀ (fish): 8,300 ~ 40,000 mg/L/96 hour(s)
2. EC₅₀ (aquatic invertebrates): 10 mg/L/48 hour (water fleas)
3. Bioconcentration factor (BCF): 0.69

Persistence and degradability:

1. Though acetone decomposes rapidly under aero or non-aero condition, but the state in oxygen of having, but high concentration is poisonous to microorganism.
2. When released into the air, this material may react with photochemically produced hydroxyl radicals and have a half-life of about 22 days.
3. When released into water, this material may biodegrade.
 - Half-life (Air): 279 ~ 2,790 hours
 - Half-life (Water surface): 24 ~ 168 hours

<ul style="list-style-type: none"> • Half-life (Groundwater): 48 ~ 336 hours • Half-life (Soil): 24 ~ 168 hours
Bioaccumulative potential: Not possible to accumulate. Most acetone will exhaust and a small amount will oxidize to carbon dioxide via breathe and urine discharge.
Mobility in soil: When released into the soil, this material is expected to evaporate and biodegrade.
Other adverse effects: -

Section 13. Disposal Considerations

Waste disposal: <ol style="list-style-type: none"> 1. Consult the relevant regulations to deal with. 2. A small amount can be burnt in the approved solvent-combustion furnace; a large amount can be incinerated in the certified and approved incinerator. 3. Store in safe containers before handling. 4. The material absorbing acetone can be buried in the approved field.

Section 14. Transport Information

United Nations Number (UN No.): 1090
UN Proper Shipping Name: Acetone
Transport Hazard classes: 3
Packaging Group: II
Marine pollutant (Yes/No): No
Specific Transport Measures and Precautionary Conditions: -

Section 15. Regulatory Information

Applicable Regulations: <ol style="list-style-type: none"> 1. Labor Safety and Health Law. 2. Regulation of Labeling and Hazard Communication of Dangerous and Harmful Materials. 3. Organic solvent poisoning prevention rules. 4. Harmful substances concentration permission standards in the labor working environment. 5. Road Traffic Safety Rules. 6. Industrial waste storage and disposal facilities standard. 7. Public dangerous goods and High-pressure flammable gas setting standards & Safety management approach.

Section 16. Other Information

References	<ol style="list-style-type: none"> 1. ChemWatch Database, 2017 2. European Chemicals Agency (ECHA)
------------	--

	3. National Institute of Technology and Evaluation
Created by	Shiny Chemical Industrial Co., Ltd.
	Address: No.5, Yeong Gong 1st Rd., Yeong An Dist., Kaohsiung City Telephone: +886-7-8619171 ext. 711~714
Revision Date	2019/09/01
Notes	The symbol " - " in this sheet indicates no available information; the symbol " / " indicates the information is not applicable to the substance.