



Material Safety Data Sheet


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Section 1 - Product and Company Identification

Product name : Isopropyl alcohol
Other names : --
Product use : Make of acetone and its derivatives; glycerol and acetate isopropyl; essential oil and other oil, alkaloids, glue, resin solvent; cellulose derivatives solvent; painting solvent, antifreeze of the liquid fuel; porcelain paint; extraction processing; dehydrating agent; preservative; lotion; denaturants agent.
Supplier's name : San Fu Chemical Co., Ltd., Shan Hua Plant
Supplier's address : 340 Hsiao Hsin Li, Shan Hua Town, Tainan Hsien, Taiwan, R.O.C.
Supplier's phone : 06-5837608 Emergency phone : 06-5837608
FAX. : 06-5839498

Section 2 - Hazards Identification

Classification :
1. Flammable Liquids Category 2
2. Acute Toxicity (Ingestion) Category 5
3. Skin Corrosion/Irritation Category 3
4. Serious Eye Damage/Irritation Category 2
The Most Important Hazards and effect
Label element :
■ Hazard symbol : Flame, Exclamation Mark

■ Signal word : Danger
Hazard statement :
1. Highly Combustible liquid and vapor
2. Swallow maybe harmful
3. Cause mild skin irritation
4. Cause eye irritation
Precautionary statement :
1. Store in well ventilated area
2. Stay away from any source of fire; no smoking
3. Avoid contacting with eyes
4. Prevent entry into sewers.
5. Prevent static electricity
Others Hazard : --

Section 3 - Composition/Information On Ingredients

Pure Substance :

Chemical name : Isopropyl alcohol
Synonyms : 2-Propanol 、 Dimethylcarbinol 、 sec-Propyl alcohol 、 Isopropanol
CAS No. : 67-63-0



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Ingredient contributing to the hazard(%) : 100%

Section 4 - First Aid Measures

The First-aid Information :

- **Inhalation :**
 1. Remove the contaminated origin or move the patient to an air-circulated place
 2. If the person is not breathing, give Artificial Respiration immediately.
 3. Seek medical attention immediately
- **Skin Contact :**
 1. Immediately rinse the injured skin with warm water above 15 minutes.
 2. Take off the contaminated cloth and shoes during flushing. Must wash before throw away or reuse.
 3. If the irritation occurs, seek medical attention immediately.
- **Eye Contact :**
 1. Immediately flush the contaminated eyes with water for 20 minutes, holding lids apart to ensure flushing of the entire surface.
 2. Seek medical attention immediately
- **Ingestion :**
 1. Unless the patient lost of consciousness or cramp, give large amount of water to induce vomiting.
 2. Seek medical attention immediately.

The Most Important Symptoms and Hazardous Effects: May cause unconsciousness or even death when overexposure to this substance.

Protection of First-aiders : Wear category C protective equipments to practice the first aid in the safety area.

Notes to a Physician : --

Section 5 - Fire Fighting Measures

Extinguishing Media : CO₂, Chemical powder, alcohol foam

Specific Hazards when Fire-fight :

1. The vapor and liquid are combustible. Liquid will accumulate the electric charge, the vapor which is heavier than air may spread far. Once the substance meet the source of fire, may cause tempering.
2. High temperature will decompose the substance and produce poisonous smoke. The containers may broke and explode in the firing area.

Specific Fire-fighting Procedure :

1. Evacuate to the safety distance or protective area for fire fighting.
2. Stay in the upwind area to avoid the dangerous vapor and poisonous decomposed substance.
3. Before fire fighting, stop the leakage of the substance. If there's no danger and unable to stop leaking, let the fire burn. If fire fighting before stopping the leakage, the vapor and the air may generate into the explosive mixture and ignite again. Separate the non-burning substance and protect the staffs
4. If safe to do so, move the undamaged containers from fire area.
5. Cool tanks or containers with water spray.
6. May be useless using water spray put out a fire, unless the fireman undertook the fire



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<p>fighting training of the flammable liquids.</p> <ol style="list-style-type: none">7. If the leakage doesn't get burn, use water spray to disperse the vapor and protect the staffs who are attempting to stop leaking.8. Useless to put out a fire with water column.9. Large fire within a large area, use unmanned operating spray controller or self swinging fire water monitor.10. Try to evacuate from the fire area and let the fire burn out.11. Away from the storage tank12. Evacuate immediately if the alarm of the Safety valve starts or changes colors due to fire.13. Wear no special protective equipments personnel are not allowed to enter.
<p>Specific Protection of Firefighters : Fireman must wear full chemical protective clothing and self-contained breathing apparatus (SCBA). (cover an aluminum, anti-spark protecting coat if necessary)</p>

Section 6 - Accidental Release Measures

<p>Personal Precautions :</p> <ol style="list-style-type: none">1. Restrict access the area until completion of clean up.2. Ensure clean up is conducted by trained personnel only.3. Wear proper personal protective equipments.
<p>Environmental Precautions :</p> <ol style="list-style-type: none">1. Process aeration in the area.2. Extinguish or eliminate all the fire origin.3. Refer to the government safety and environmental protection unit.
<p>Methods for Cleaning up :</p> <ol style="list-style-type: none">1. Do not touch spilled material.2. Avoid spilled drain into the sewer or airtight room.3. If safe to do so, try to prevent or reduce leakage.4. Use the soil, dry sand or other non-combustible material to absorb the leakage.5. Small Spill:<ol style="list-style-type: none">5.1 Absorb with non-combustible material.5.2 Collect the contaminated absorber and leakage into the proper covered container with labels.5.3 Wash the spilled area with water.6. Large Spill: Contact the fire fighting, emergency control unit and supplier for help.

Section 7 - Handling and Storage

<p>Handling :</p> <ol style="list-style-type: none">1. This is a combustible and poisonous liquid. While processing, the engineering control should be operated and make good use of personal protective equipments. Staffs should under the training in hazardous info and safety use of the related substance.2. Extinguish all the ignition sources and away from heat and incompatibles.3. Non-Smoking mark should post in the working area.4. The liquid will accumulate the electric charge. Need extra design to increase its conductivity. All the tanks, containers and tubes should be grounded for transfer to avoid static sparks. While transporting, should decrease the flow speed, increase the operating time, increase the time of the liquid in the tube or low temperature operating.
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5. When operation is not in the airtight system, make sure the mixing container, receiving transportation equipments and container need to connect with the electric potential.
6. Empty tank, container, tube may have danger residue. Must not do the welding, cutting, drilling or other heat producing work without cleaning.
7. The non-sparkling ventilation system should be explosive preventing style in the working area.
8. Avoid producing drops or vapor. Working in the specific well ventilated area and use the minimum amount. Operating area should be separated from storage area.
9. If necessary, wear proper personal protective equipments to avoid contact with the chemicals or contaminated equipments.
10. Do not use with incompatibles (strong oxidizer) to prevent the incidence of fire and explosion.

Storage :

1. Unobstructed the path and exit.
2. In the storage area and highly operative area, considering installing the leaking and fire detective system, proper automotive fire fighting system or adequate equipments for emergency operation.
3. Use the compatibles made containers. Pay attention during dispensing the substances. Don't spill from the container.
4. Don't use air or inertia gas to carry out the substance with pressure from the container.
5. Unless the mixing area is separated by the fire –resistant construction, don't do the mixing process in the storage area.
6. Use the approved combustible liquid container and mixing equipments.
7. Don't pour the contaminated liquid to the original storage tank.
8. The container should be labeled. Keep tight without using and avoid damage.
9. Store in a cool, dry, well ventilated and indirect to sunlight location. Away from heat, ignition and incompatibles.
10. Storing equipments should be built by fire resistance material.
11. The floor should be made by impermeable material to prevent absorbing by the floor.
12. Make a threshold at the door and build a slope or a groove in front of the door to enable the fluid leakage to be emitted to a safe place.
13. Clearly labeled in the entrance of the storage place, no obstacle. Only allowed trained personnel access.
14. Separate the working area and storage place. Away from the elevator and main entrance of the building/room.
15. Keep a fire extinguisher and cleaning equipment nearby the storage area.
16. Checking the damage or spill of the container regularly.
17. Checking the brand new containers and see if they are properly label and without damage.
18. Control the storage in a limited amount.
19. Use the compatibles made containers to store the spilled material.
20. The Storage tank should grounded and need to connect the electric potential with other equipments.
21. The barrels that store the flammable liquids should install the pressure reducing valve and vacuum relief valve.
22. Store in the suggested temperature from the chemical manufacturer or supplier. If necessary, install the temperature alarm.
23. Avoid indoor storage in large amount. Ensure the storage in an isolated fireproof building.
24. The exhaust of the storage tank should install the extinguisher.



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25. The storing basin shall be based on the ground with its base completely sealed from leakage, and shall be surrounded by a fluid-protective dike capable of carrying the entire volume of storage.

Section 8 - Exposure Controls & Personal Protection

Engineering measures :			
<ol style="list-style-type: none"> 1. Use adequate general or local exhaust ventilation. 2. Using non-sparkling and grounded ventilation system along. 3. Venting holes direct to outdoor. 4. Provide the adequate fresh air. 			
Control parameters			
TWA	STEL	Ceiling	Biological standards
400ppm	500ppm	--	--
Personal protective equipment :			
<ul style="list-style-type: none"> ■ Respiratory Protection : <ul style="list-style-type: none"> • Below 2000 ppm: Wear continuous-flow mode respirator with oxygen contained breathing apparatus, a full-face organic vapor respirator or chemical cartridge respirator. Wear a NIOSH approved full-face piece self-contained breathing apparatus. • Unknown concentration: Wear a NIOSH approved full-face piece self-contained breathing apparatus and positive pressure. • Rescue: Wear a full-face organic vapor respirator or NIOSH approved full-face piece self-contained breathing apparatus. ■ Hand Protection : Wear impervious gloves made of Butyl rubber, rubber like, Viton, 4H, CPF3, or Reponder. ■ Eye Protection : Wear chemical splash goggles and face shield. ■ Skin and Body Protection : Wear protective clothing, overalls, working boots made by rubber materials mention above. 			
Hygiene measures :			
<ol style="list-style-type: none"> 1. Immediately take out of contaminated cloth after work. Either disposes these clothes or clean it before wears them again. It is a must to let the laundry know the dangerous of these contaminated clothes. 2. Strictly no smoking and eating in the working area. 3. Must wash thoroughly after processing this material. 4. Keep hygiene in the working area. 			

Section 9 - Physical & Chemical Properties

Appearance : colorless liquid	Odor : rubber alcohol
Color : Transparent	Melting Point: -88.5°C
Smell: 3.3-610ppm (detecting) 7.6-49ppm (awaring)	
pH value : --	Boiling point/boiling range : 82.3°C
Flammability: --	Flash point : 12 °C
Decomposition temp : --	Test method : closed cup
Auto ignition temp : 399°C	Explosion properties : 2.0%~12%



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Vapor pressure : 33 mmHg @20°C	Vapor density : 2.07 (air=1)
Density : 0.785 (water=1)	Solubility : dissolve in water
log Kow : 0.05	Evaporation Rate : 1.5 (Butyl acetate = 1)

Section 10 - Stability & Reactivity Data

Stability : It's stable within the normal condition, may be formed into peroxide very slowly.
Possible hazardous reactions under specific conditions : 1. Strong oxidizers(nitrate, perchlorate, peroxide): increase the harmfulness of the fire explosion. 2. Phosgene: produce chloroformate acid Isopropyl alcohol, Hydrochloric acid. 3. Molysite: may cause explosive heat decomposed reaction. 4. Hydrogen – palladium: ignition while mixed in the air. 5. Strong acid: May occur violent reaction 6. Alkali metals or alkaline earth metals: may release combustible drugs.
Conditions to avoid : Heat, spark, static electricity, source of fire, light
Materials to avoid : Strong oxidizer, Phosgene, Molysite, hydrogen – palladium
Hazardous decomposition products : --

Section 11 - Toxicological Information

Route of exposure : Skin, inhalation, ingestion, eyes
Symptoms : Irritation, Dizziness, anesthesia, nausea, vomit, diarrhea
Immediate Toxicity : 1. Skin : Won't irritate the skin in the short exposure. 2. Inhalation : 2.1 Below the 400ppm concentration, mild irritation of the upper respiratory tract 2.2 High concentration, cause dizziness, movement disorder(Loss of coordination) and deep coma 3. Ingestion : 3.1 May cause Dizziness, stomachache, painful cramp, nausea, vomit, and diarrhea 3.2 Over exposure will cause lost consciousness and death. 3.3 Lethal dose of the human is 131g 4. Eye : 4.1 Below the 400ppm concentration causes mild irritation. 4.2 Severe irritation while direct contact to eyes. ● LD ₅₀ : 4710mg/kg(write RAT, oral) ● LC ₅₀ : 16000ppm/8H (write RAT , inhalation)
Specific effects : 1. Skin: May cause skin dryness and cracks with long-term or frequently contacting. 2. Ingestion: No specific chemical or cell structure change in the blood or urine after taking 6.4mg/kg daily for 6 weeks. 3. 3500ppm/7H (pregnant 1-19days, rodent, inhalation) causes embryo developmental retardation. 4. IARC ranks in Group 3: Can't determine the Carcinogenicity to human being.



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Section 12 - Ecological Information

Ecotoxicology : <ul style="list-style-type: none">■ LC₅₀(fish) : --■ EC₅₀(Aquatic Invertebrates) : --■ Bioconcentration factor (BCF) : --
Persistence and degradability : -- <ol style="list-style-type: none">1. 4 experimental results shown, IA will be decomposed 58% BOD theoretical value in the contaminated water after 5 days2. When the substance is released into the water, will evaporate expectedly (aprox. Half life: 5.4 days) and be decomposed by organism. (Speedily decompose in the Lab experiment, but no related data for natural water source.)3. When the substance is released to the hemisphere, will process photolysis (Half life: about 1- several days). This could be dissolved in the water, may be carried by the rain.<ul style="list-style-type: none">■ Half-Life (Air) : 6.2~72hours■ Half-Life (Water surface) : 24~168 hours■ Half-Life (Groundwater) : 48~336 hours■ Half-Life (Soil) : 24~168 hours
Bioaccumulative potential : Won't accumulate inside the body
Mobility in soil : When the substance is released in the soil, it will evaporate fast and drain under the ground because of its high vapor pressure and low absorption of the soil.
Other adverse effects : Highly toxicity to the marine livings.

Section 13 - Disposal Considerations

Methods of disposal : <ol style="list-style-type: none">1. Bury the disposal waste in the specific landfill or incinerate in the approved incineration furnace for solvent.2. If the small amount of the disposal waste drained in the sewer or drainage, flush with large amount of water to prevent the accumulation of the combustible vapor.3. Refer to the Environmental Protection Unit if large amount of leakage is seen.

Section 14 - MSDS Transport Information

UN classification number : 1219
Proper D.O.T Shipping Name : Isopropyl alcohol
Hazard Class : Category 3 Flammable liquid
Packing Group : II
Marine pollution : none
Specific precautionary transport measures and conditions : —

Section 15 - Regulatory Information

Regulations : <ol style="list-style-type: none">1. Regulations for Labor Safety and Health Installations
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