Safety Data Sheet

久資化工股份有限公司
Chiu Tze Chemical Co., Ltd.

1. Product and Manufacturer Information

Product name： Isopropyl alcohol
Other names：--
Product use：Widely used in variety fields. Mainly use for industrial solvent or to extract and to purify of natural products. Also is a cleaning and drying agent.
Manufacturer or Supplier：Chiu Tze Chemical Co., Ltd. **Address**：No. 818, Baiyu S. Rd., Guanyin Dist., Taoyuan City 328, Taiwan (R.O.C.) **Tel**：886-3-4735939
Emergency Tel：886-3-4735939 **Fax**：886-3-4734269

2. Hazard Identification

Hazard Material Category： 1. Flammable liquid: Category 2
2. Serious eye damage/eye irritation Category 2
3. Specific target organ toxicity – single exposure Category 3

Label Sign：

Label Statements ：Flammable liquid、Toxicity

Sign：Warning

Hazard Statements：1. Flammable liquid and vapor
2. May cause drowsiness or dizziness
3. May cause serious eyes irritation

Precautionary Statements：1. Store in a well-ventilated place
2. Keep container tightly closed and cool.
3. Avoid breathing dust, fume, vapors and mist
4. Away from any source of ignition

Others：

3. Composition/ Information on Ingredients

Chemical Name：Isopropyl alcohol
Synonymous Name： 2-Propanol、Dimethylcarbinol、sec-Propyl alcohol、Isopropanol
CAS No.：**67**-63-0
Percentage of Hazardous Ingredient：100%

4. First Aid Measures

The First Aid Measures for Different Exposure Routes：

- **Inhalation**：Remove the person from the source of exposure and rescuers are required to wear proper gears. If breathing is difficult, oxygen should be administered by qualified personnel. Seek for medical advice.
- **Skin Contact**：Flush the affected area with clean water for more than 15 minutes and seek for medical advice.
- **Eye Contact**：Flush the affected area with clean water for more than 20 minutes and seek for medical advice.
- **Ingestion**：Do not eat anything else, if may, drink some water and seek for medical help immediately.

The Worst Symptoms：Massive expose may cause loss of consciousness or death.

Note to First-aid Personnel：Wear Class C protection equipment

Note to Doctor：Maintain adequate ventilation and oxygenation of the patient. No specific antidote. Treatment of exposure should be focused on the control of symptoms of the patient

5. Firefighting Guide

Fire Extinguisher：Carbon Dioxide, Alcohol Resistant Foam, Chemical Arid Powder.

Special occasions may occur during fire：

1. The smoke may contain the original material in addition to varying compositions of toxic or irritating combustion products.

Firefighting Guidelines：

1. Keep people away then isolate fire and deny unnecessary entry.
2. Stay upwind and keep out of low areas where gases can accumulate.
3. Remove the container away from the firing place, if possible
4. Do not use direct water stream which may spread fire and is not effective in extinguishing fire
5. Burning liquids may be moved by flushing with water to protect personnel and minimize property damage.
6. Material may burn with invisible flame.

Special Equipment for Firefighters：Respirators, protective gloves and fire clothing; if possible, use chemical resistant firefighting clothing.

6. Act of Leaking

Individual Precaution：

1. Isolate any irrelevant person from the leak until the leakage is cleaned
2. Eliminate all sources of ignition in vicinity of leak to avoid fire or explosion
3. Only trained people are allowed to clean up the leakage

Environmental Precaution：

1. Stop further leaking if possible.
2. Prevent the leakage from entering into soil and sewers.

Cleaning Methods：

1. Use foam to smother or suppress.
2. Pump with explosion-proof equipment.
3. Collet it suitable and properly labeled containers.
4. Contact emergency center for massive leakage.

7. Handling and Storage Methods

Handling：

1. Away from any source of ignition.
2. Avoid direct contact with eyes, skins and clothing and inhalation
3. Operation needs to be done in a well-ventilated place.
4. Smoking is extremely prohibited.
5. Containers, even those that have been emptied, can contain vapors; therefore, do not cut, drill, grind, weld or perform similar operations on or near empty containers

Storage：

1. Store away from direct sunlight and minimize sources of ignition such as static build up, heat, spark or flame.
2. All sorts of containers have to be tightly closed and labeled all the time.
3. Storages have to be away from any incompatible materials.
4. Examine the containers for leakage periodically.

8. Exposure Controls

Engineering Controls：

1. Use local exhaust ventilation or other engineering controls to maintain airborne levels below requirements
2. If there are no applicable exposure limit requirements, general ventilation should be sufficient for daily uses

Control Parameters			
TWA	**STEL**	**CEILING**	**BEIs**
4000 ppm	500 ppm		

Individual protection measures：

Respiratory protection：Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements. If there are no applicable exposure limit requirements, wear respiratory protection when one experienced adverse effects such as irritation or discomfort

Hand protection：Wear chemical protective gloves

Eye protection：Use safety goggles with side shields

Skin and Body protection：Wear clean, body covering clothing

Hygiene measures：

1. After duty one should take off contaminated clothes, if any, clean thoroughly before next use or disposal. Laundry worker must be advised about the hazard
2. No food or smoking at workplace
3. Keep the workplace clean and neat

9. Physical and Chemical Properties

Appearance：Colorless liquid	**Odor**：Alcohols
Odor threshold：：0.063-7.4ppm (Detection)、0.038-12ppm (Sense）	**Melting point**：-88.5℃
pH：-	**Boiling point**：82.3 ℃
Flammability (solid, gas）：Not applicable to liquids-	**Flash Point**：12℃ **Test method**：closed cup
Decomposition temp.：—	
Auto-ignition temp.：399℃	**Explosion limit**：2.0% ~ 12% (200℃)
Vapor pressure：33 mmHg @20℃	**Vapor density**：2.07 (air=1)
Density：0.785（Water=1）	**Solubility**：100%
Log Kow：0.05	**Evaporation Rate**：1.5 (Butyl acetate＝1)

10. Stability and Reactivity

Reactivity：Stable under recommended storage conditions
Possibility of hazardous reactions：Avoid contact with reducing agents.
Conditions to avoid：Avoid static discharge and any kind of ignitions.
Incompatible materials：Strong Acids, strong oxidizers, aldehydes, halogens
Hazardous decomposition products：—

11. Toxicological Information

Route of exposure：Skin, inhalation, ingestion, eyes
Symptoms：Irritation, headache, dizziness and drowsiness
Acute toxicity： **Skin**：Prolonged exposure is not likely to cause significant skin irritation. **Inhalation**：Brief exposure (minutes) is not likely to cause adverse effects. Excessive exposure (400 ppm) may cause eyes, nose and throat irritation. Dizziness and loss of consciousness may also occur. **Oral**：Low toxicity if swallowed, adverse effects are likely to occur with large amount of swallow. May cause central nervous system depression, nausea and vomiting. **Eyes**：May cause slight temporary eye irritation when exposed to less than 400 ppm and severe irritation with direct contact. LD50: 4710mg/kg (RAT, oral) □ LC50: 16000ppm/8hours (write RAT，inhalation)
Chronic Toxicity or Long Term Effects： Drying and flaking skin may occur.

12. Ecological Information

Ecotoxicity：LC50（Fish）：— EC50（Aquatic Invertebrates）：— Bio concentration factor（BCF）：—
Persistence and degradability： **Biochemical oxygen demand**：**58%** in industrial sewage **(20℃ 5days)** **Half-life（air）：6.2~72 hours** **Half-life (Water surface) : 24~168 hours** **Half-life (Groundwater) : 48~336**

Half-life (Soil) : 24~168
Bioaccumulative potential：Low
Mobility in soil：Very high
Other adverse effects：Acute toxicity to aquatic lives.

13. Disposal Considerations

Waste treatment methods：

1. Incineration
2. Bury
3. Any disposal practice must be in compliance with local regulations and laws
4. Massive leakage must report to related environmental facility.

14. Transport Information

UN number：1219
UN shipping name：Isopropyl alcohol
Transport hazard class(es)：3
Packing group：Ⅱ
Environmental hazards：Not considered environmental hazardous
Special precautions：—

15. Regulatory Information

Applicable regulations：

1. Occupational safety and health act
2. Regulations for the Labeling and Hazard Communication of Hazardous Chemicals
3. Organic solvent poisoning prevention rules
4. Standards of Permissible Exposure Limits at Work Place
5. Road and traffic safety rules
6. Methods and Facilities Standards for the Storage, Clearance and Disposal of Industrial Waste
7. Public Hazardous Materials and Flammable Pressurized Gases Establishment Standards and Safety Control Regulations
8. Assessment and Classification of Hazardous Chemicals Regulation
9. Work Place Environment Monitoring Regulations.

16. Other Information

References	1. HSDB Database, 2017 2. ChemWatch Database, 2017 3. ECHA Chem, Reach information 4. Hazardous Chemical Chinese Database, EPA
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