Effective Date: February 2017
REF NO.:AK/0112/IPA

Iso Propyl Alcohol / IPA

1. Chemical Product and Company Identification

Product Identification:
ISO PROPYL ALCOHOL

Chemicals Name:
2-PROPANOL

Other Trade Name:
2-PROPANOL, AIKSOLV PRINTING ALCOHOL, ALCOHOL ISOPROPYL, CHEMICAL - 95885, CHEMOIL IPA, FILM CLEANER, FLX-IED-CE0100, FLX-IED-CE0600, INDUSTRIAL ALCOHOL, IPA, IPA (TECHNICAL GRADE), ISO PROPYL ALCOHOL, ISO PROPYL ALCOHOL (164020), ISOPROPANOL, ISOPROPYL ALCOHOL (MATERIAL NO:85246442), ISOPROPYL ALCOHOL (PC 801), ISOPROPYL ALCOHOL (R-321.15), ISOPROPYL ALCOHOL (S1114), NAILI ALCOHOL, OPERATING SUPPLIES CONSUMABLES - CLEANING (IPA), OPERATING SUPPLIES CONSUMABLES - ESD, PS-2094, PS-2431, RS-ISOPROPYL ALCOHOL, ZIPA-U

Manufacturer/Supplier:
Aik Moh Paints & Chemicals Pte Ltd
20 TUAS STREET, SINGAPORE 638457
Tel : 6863 1993 Fax : 6863 8033
Website : www.aikmoh.com.sg

2. Hazards Identification

GHS Classification

Flammable liquids	2
Serious Eye Damage/Irritation	2A
Acute Toxicity (oral)	5
Specific Taget Organ Sytemic Toxicity - (Single Exposure)	3 (Narcotic effects)
Aspiration Hazard	2

GHS Label Elements

Signal words: Danger

Physical hazards:
Hazard classification:
H225 - Highly flammable liquid and vapour

Health hazards:
Hazard classification:
H319 - Causes serious eye irritation
H303 - May be harmful if swallowed
H336 - May cause drowsiness or dizziness
H305 - May be harmful if swallowed and enters airways

Precautionary Statement(s):
Prevention
P210 - Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P233 - Keep container tightly closed.
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 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): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.
P370 + P378 - In case of fire: Use appropriate medium for extinction.
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 victim to fresh air and keep at rest in a position comfortable for breathing.
P312 - Call a POISON CENTER or doctor/physician if you feel unwell.
P301 + P310 - IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P331 - Do NOT induce vomiting.

Storage

P403 + P235 - Store in a well-ventilated place. Keep cool.
P405 - Store locked up.

Disposal

P501 - Dispose of contents/container to an approved waste disposal plant.

3. Composition Information on Ingredients

Material Name	CAS No.	EINECS No.	Concentration
Propan-2-ol	67-63-0	200-661-7	100%

4. First-Aid Measures

Description of first aid measures

Inhalation : Remove to fresh air. If rapid recovery does not occur, transport to nearest medical facility for additional treatment.

Skin Contact : Remove contaminated clothing. Flush exposed area with water and follow by washing with soap if available.

Eye Contact : Immediately flush eyes with large amounts of water for at least 15 minutes while holding eyelids open. Transport to the nearest medical facility for additional treatment.

Ingestion : 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 101oF (37oC), shortness of breath, chest congestion or continued coughing or wheezing. If vomiting occurs spontaneously, keep head below hips to prevent aspiration. Give nothing by mouth. Do not induce vomiting.

Notes to physician

Most important symptoms/effects, acute & : Eye irritation signs and symptoms may include a burning delayed sensation, redness, swelling, and/or blurred vision. Defatting dermatitis signs and symptoms may include a burning sensation and/or a dried/cracked appearance. Other signs and symptoms of central nervous system (CNS) depression may include headache, nausea, and lack of coordination. Respiratory irritation signs and symptoms may include a temporary burning sensation of the nose and throat, coughing, and/or difficulty breathing.

Immediate medical attention, special : Causes central nervous system depression. Call a doctor treatment or poison control center for guidance.

5. Fire Fighting Measures

Clear fire area of all non-emergency personnel.

Specific Hazards : Carbon monoxide may be evolved if incomplete combustion occurs. Will float and can be reignited on surface water. The vapour is heavier than air, spreads along the ground and distant ignition is possible.

Extinguishing Media : Alcohol-resistant foam, water spray or fog. Dry chemical powder, carbon dioxide, sand or earth may be used for small fires only. Do not discharge extinguishing waters into the aquatic environment.

Unsuitable Extinguishing Media : Do not use water in a jet.

Protective Equipment for Firefighters : Wear full protective clothing and self-contained breathing apparatus.

Other Advice : Keep adjacent containers cool by spraying with water.

6. Accidental Release Measures

Observe all relevant local and international regulations.

Personal Precautions, Protective equipment : Avoid contact with spilled or released material. Immediately and Emergency Procedures remove all contaminated clothing. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet.

Environmental Precautions : Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area. Use appropriate containment (of product and fire fighting water) to avoid environmental contamination. Prevent from spreading or entering drains 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 bonding and grounding (earthing) all equipment. Monitor area with combustible gas indicator.

Methods and material for containment and :
For small liquid spills (< 1 drum), transfer by mechanical clean up means to be a labelled, 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.
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.

Additional Advice : See Chapter 13 for information on disposal. Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Vapour may form an explosive mixture with air.

7. Handling and Storage

General Precautions : Avoid breathing vapours or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. On guidance on selection of personal protective equipment see Chapter 8 of this Material 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.

Precautions for safe handling : Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Restrict line velocity during pumping in order to avoid generation of electrostatic discharge (<= 10 m/sec). Avoid splash filling. Do NOT use compressed air for filling, discharging, or handling operations. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Handling Temperature: Ambient.

Conditions for safe storage : Keep away from aerosols, flammables, oxidizing agents, corrosives and from products harmful or toxic to man or to the environment. Must be stored in a well-ventilated area, away from sunlight, ignition sources and other sources of heat. Storage Temperature: Ambient.

Product Transfer : Keep containers closed when not in use. Do not use compressed air for filling, discharging or handling.

Recommended Materials : For container paints, use epoxy paint, zinc silicate paint. For containers, or container linings use mild steel, stainless steel.

Unsuitable Materials : Aluminium if > 50 °C. Most plastics. Neoprene rubber.

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.

Other Advice : Ensure that all local regulations regarding handling and storage facilities are followed.

8. Exposure Controls/Personal Protection

If the American Conference of Governmental Industrial Hygienists (ACGIH) value is provided on this document, it is provided for information only.

Occupational Exposure Limits

Source	Type	PPM	mg/m^3
SG PEL	TWA	400 ppm	983 mg/m^3
SG PEL	STEL	500 ppm	1230 mg/m^3
ACGIH	TWA	200 ppm	
ACGIH	STEL	400 ppm	

Additional Information : Wash hands before eating, drinking, smoking and using the toilet.

Biological Exposure Index (BEI) - See reference for full details

Determinant	Sampling time	BEI	eference
Acetone in Urine	Sampling time: End of shift at end of work week	40 mg/l	ACGIF BEL (2008)

Biological Exposure Index (BEI) – See reference or full details.
Nonspecific, Background

Appropriate Engineering Controls : 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: Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Eye washes and showers for emergency use.

Individual protection 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 suitable, select an appropriate combination of mask and filter. Select a filter suitable for organic gases and vapours [boiling point > 65 °C (149 °F)] meeting EN14387. Where air-filtering respirators are unsuitable (e.g., airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus.

Hand Protection : Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739, AS/NZS: 2161) made from the following materials may provide suitable chemical protection:

Longer term protection: Natural rubber. Butyl rubber. Incidental contact/Splash protection: Neoprene rubber. Viton. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, glove thickness, 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.

Eye Protection : Chemical splash goggles (chemical monogoggles). Monogoggles (EN166)

Body Protection : Use protective clothing which is chemical resistant to this material. Safety shoes and boots should also be chemical resistant.

Thermal hazards : Not applicable

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. Examples of sources of recommended air monitoring methods are given below or contact supplier. Further national methods may be available. National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods, http://www.cdc.gov/nios /nmam/nmammenu.html. Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods, http://www.osha-slc.gov/dts/sltc/methods/toc.html. Health and Safety Executive (HSE), UK: Methods for the Determination of Hazardous Substances, http://www.hsl.gov.uk/publications/mdhs.aspx.

Environmental Exposure Controls : Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour.

9. Physical and Chemical Properties

Appearance : Clear Liquid.
Odour : Characteristic
Odour Threshold : Data not available.
pH : Not applicable
Boiling Point : 82 °C – 83 °C / 180 °F – 181 °F
Melting / Freezing Point : -88 °C / -126 °F
Flash Point : 12 °C / 54 °F (Abel)
Explosion / Flammability Limits in Air : 2 – 12 % (V)
Auto-ignition Temperature : 425 °C / 797 °F (ASTM D-2155)
Flammability (solid, gas) : Data not available.
Vapour Pressure : 4,100 Pa at 20 °C / 68 °F
Relative Density : 0.78 – 0.79 at 20 °C / 68 °F
Density : Data not available.
Water Solubility : Completely miscible.
Solubility in Other Solvents : Readily soluble in various organic solvents.
n-Octanol/Water Partition Coefficient (log Pow) : Data not available.
Decomposition Temperature : Note: Stable under normal conditions of use. Reacts with strong oxidising agents., Reacts with strong acids.
Dynamic Viscosity : Data not available.
Kinematic Viscosity : Data not available.
Vapour Density (air = 1) : 2 at 20 °C / 68 °F
Volatile Organic Carbon Content : 59.9 % (EC/1999/13)
Evaporation Rate (nBuAc = 1) : 1.5 (ASTM D 3539, nBuAc = 1)
Hygroscopicity : Completely miscible.

10. Stability and Reactivity

Chemical Stability : Stable under normal conditions of use. Reacts with strong oxidising agents. Reacts with strong acids.

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

Incompatible materials : Strong oxidising agents. Strong acids.

Hazardous Decomposition Products : Thermal decomposition is highly dependent on conditions. A complex mixture of airborne solids, liquids and gases, including carbon monoxide, carbon dioxide and other organic compounds will be evolved when this material undergoes combustion or thermal or oxidative degradation.

Possibility of hazardous reaction : Data not available.

Sensitivity to Static Discharge : Data not available.

11. Toxicological Information

Information on Toxicological effects
Basis for Assessment : Information given is based on product testing.
Likely routes of exposure : Exposure may occur via inhalation, injection, skin absorption, skin or eye contact, and accidental ingestion.

Acute Toxicity
Acute Toxicity – Oral : May be harmful if swallowed. LD50 >2000 - <=5000 mg/kg , Rat
Acute Toxicity – Dermal : Low toxicity: LD50 >5000 mg/kg , Rabbit
Acute Toxicity – Inhalation : Low toxicity if inhaled. High concentration may cause central nervous system depression resulting in headaches, dizziness and nausea.

Skin Corrosion/Irritation : Not irritating to skin.

Serious Eye Damage/Irritation : Causes eye irritation.

Respiratory Irritation : Data not available.

Respiratory or Skin Sensitization : Not a skin sensitiser.

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

Germ Cell Mutagenicity : Not mutagenic.

Carcinogenicity : Not carcinogenic.

Reproductive & Development Toxicity : Does not impair fertility. Not a developmental toxicant.

Specific Target Organ Toxicity - Single Exposure : May cause drowsiness or dizziness.

Specific Target Organ Toxicity - Repeated Exposure : Kidney: caused kidney effects in male rats which are not considered relevant to humans.

Additional Information : Exposure may enhance the toxicity of other materials.

12. Ecological Information

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

Acute Toxicity
Fish : Practically non toxic: LL/EL/IL50 > 100 mg/l
Aquatic Invertebrates : Practically non toxic: LL/EL/IL50 > 100 mg/l
Algae : Practically non toxic: LL/EL/IL50 > 100 mg/l
Microorganisms : Practically non toxic: LL/EL/IL50 > 100 mg/l

Mobility : If product enters soil, one or more constituents will be mobile and may contaminate groundwater. Dissolves in water.

Persistence/Degradability : Oxidises rapidly by photo-chemical reactions in air. Readily biodegradable.

Bioaccumulative Potential : Not expected to bioaccumulate significantly.

13. Disposal Considerations

Material Disposal : 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 water.

Container Disposal : Drain container thoroughly. After draining, vent in a safe place away from sparks and fire, Residue may cause an explosion hazard. Do not puncture, cut or weld uncleaned drums. Send to drum recover or metal reclaimer.

Local Legislation : 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.

14. Transport Information

LAND (as per ADR classification): Regulated

Class : 3
Packing Group : II
Hazard Identification No. : 33
UN No. : 1219
Danger Label (primary risk) : 3
Proper Shipping Name : ISOPROPANOL
Environmentally Hazardous : No

IMDG

Identification Number : UN 1219
Proper Shipping Name : ISOPROPANOL
Class / Division : 3
Packing Group : II
Marine Pollutant : No

IATA (Country variations may apply)

UN No. : 1219
Proper Shipping Name : ISOPROPANOL
Class / Division : 3
Packing Group : II

Sea (Annex II of MARPOL 73/78 and the IBC code)

Pollution Category : Z
Ship Type : 3
Product Name : Isopropyl alcohol

Special Precaution : Refer to Chapter 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 may cause asphyxiation or death. Personnel must observe strict safety precautions when involved with a confined space entry.

15. Regulatory Information

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

Local Regulations:

Workplace Safety and Health Act & Workplace Safety and Health (General Provision) Regulations
This product is subject to the SDS, Labelling, PEL and other requirements in the Act/ Regulations.

Environmental Protection and Management Act and Environmental Protection and Management (Hazardous Substances) Regulations
This product is not subject to control under this Act/Regulation.

Maritime and Port Authority of Singapore (Dangerous Good, Petroleum and Explosives) Regulations
This product is not subject to requirement of this regulation.

Fire Safety Act and Fire Safety (Petroleum & Flammable Materials) Regulations
This product is not subject to requirement of this regulation.

Chemical Inventory Status

AICS : Listed.
DSL : Listed.
INV (CN) : Listed.
ENCS (JP) : Listed. (2)-207
ISHL (JP) : Listed. 2-(8)-319
TSCA : Listed.
EINECS : Listed. 200-661-7
KECI (KR) : Listed. KE-29363
PICCS (PH) : Listed.

16. Other Information

Disclaimer

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This information is based on our current knowledge and is intended to describe the product for the only. It should not therefore be construed as guaranteeing any specific property of the product.