

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: **Isopropyl Alcohol**

Product Code: IPA

Synonyms: Isopropanol; Dimethylcarbinol; sec-Propyl alcohol; Rubbing alcohol; Petrohol; 1-Methylethanol; 1-Methylethyl alcohol; 2-Hydroxypropane; 2-Propyl alcohol; Propan-2-ol; 2-Propanol

CAS Number: 67-63-0

Company Identification: **NuGeneration Technologies, LLC**

www.nugentec.com/biotech

1155 Park Ave.
Emeryville, CA 94608

1-888-996-8436 (For product information) 1-800-424-9300 (For emergencies - CHEMTREC)

2. COMPOSITION / INFORMATION ON INGREDIENTS

CONTAINING: HAZARDOUS AND/OR REGULATED COMPONENTS

<u>Chemical Name</u>	<u>Amount</u>	<u>CAS Number</u>	<u>Hazardous</u>	<u>OSHA PEL (ppm)</u>	<u>ACGIH TLV (ppm)</u>
Isopropyl Alcohol	100%	67-63-0	YES	200	200

California Prop 65: This product does NOT contain an ingredient(s), above the safe harbor limits, which are known to the state of California to cause cancer, birth defects, or other reproductive harm.

HAZARDS DISCLOSURE: This product contains known hazardous materials in reportable levels as defined by the OSHA Hazard Communication Standard 29 CFR 1910.1200 except as listed above. As defined under Sara 311 and 312, this product contains known hazardous materials.

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

WARNING! FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED OR INHALED.
CAUSES IRRITATION TO EYES AND RESPIRATORY TRACT.
AFFECTS CENTRAL NERVOUS SYSTEM. MAY BE HARMFUL IF ABSORBED THROUGH SKIN.
MAY CAUSE IRRITATION TO SKIN.



Hazardous Material Information System (HMIS):	Health	2
	Flammability	3
	Reactivity	0
	Personal Protection	C

National Fire Protection Association (NFPA):

NFPA/HMIS Definitions: 0-Least, 1-Slight, 2-Moderate, 3-High, 4-Extreme

Protective Equipment: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER.

POTENTIAL HEALTH EFFECTS**ROUTES OF ENTRY:** Skin contact. Eye contact. Inhalation. Ingestion.**TARGET ORGANS:** skin.**INHALATION:** Inhalation of vapors irritates the respiratory tract. Exposure to high concentrations has a narcotic effect, producing symptoms of dizziness, drowsiness, headache, staggering, unconsciousness and possibly death.**INGESTION:** Can cause drowsiness, unconsciousness, and death. Gastrointestinal pain, cramps, nausea, vomiting, and diarrhea may also result. The single lethal dose for a human adult = about 250ml (8-ounces).**SKIN CONTACT:** May cause irritation with redness and pain. May be absorbed through the skin with possible systemic effects.**EYE CONTACT:** Vapors cause eye irritation. Splashes cause severe irritation, possible corneal burns and eye damage.**CHRONIC EXPOSURE:** Prolonged or continuous skin contact with the liquid may cause defatting with drying, cracking, irritation and dermatitis following.**AGGRAVATION OF PRE-EXISTING CONDITIONS:** Persons with pre-existing skin disorders or impaired liver, kidney, or pulmonary function may be more susceptible to the effects of this agent.**4. FIRST AID MEASURES****INHALATION FIRST AID:** If a respiratory problem develops from vapors. Remove victim to fresh air and provide oxygen if breathing is difficult. Get medical attention. If the victim has difficulty breathing or tightness of the chest, is dizzy, vomiting or unresponsive, give 100% oxygen with rescue breathing or CPR as required and transport to the nearest medical facility.**SKIN CONTACT FIRST AID:** Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.**EYE CONTACT FIRST AID:** If contact with eyes, immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.**INGESTION FIRST AID:** Aspiration hazard. If swallowed, vomiting may occur spontaneously, but DO NOT INDUCE. If vomiting occurs, keep head below hips to prevent aspiration into lungs. Never give anything by mouth to an unconscious person. Call a physician immediately.**STATEMENT OF PRACTICAL TREATMENT:** Always have plenty of water available for first aid. Get medical attention if any symptoms develop or persist.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES: EXTREMELY FLAMMABLE!

AUTO IGNITION TEMPERATURE: 425 °C (797 °F)

FLASH POINT: 12 °C (54 °F) CC

FLAMMABLE LIMITS IN AIR, % by Volume: lel: 2.0; uel: 12.7

EXTINGUISHING MEDIA: Carbon dioxide, alcohol foam, dry chemical extinguishers. Water may be ineffective. Water spray may be used to keep fire exposed containers cool, dilute spills to nonflammable mixtures, protect personnel attempting to stop leak and disperse vapors. PLEASE NOTE: 10% of IPA in water has a flash point below 41 deg. °C (105 °F).

6. ACCIDENTAL RELEASE MEASURES

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802. Follow applicable OSHA regulations (29 CFR 1910.120).

7. HANDLING AND STORAGE

RECOMMENDED STORAGE CONDITIONS: Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Protect storage area from exposure to external fires. After this container has been emptied, it may contain explosive vapors; observe all warnings and precautions listed for the product. Do not cut, or weld on or near this container. Protect storage area and processing vessels from high energy projectiles by a suitable barricade. Separate from flammables and sensitizers. Do not reuse or dispose of empty containers until they have been rinsed with water. DO NOT enter confined spaces until atmosphere has been checked.

SHELF LIFE: See Label on packaging.

HANDLING (PERSONNEL): Avoid all personal contact, including inhalation. Wear protective clothing when risk of exposure occurs. Use in a well-ventilated area. Prevent concentration in hollows and sumps. DO NOT enter confined spaces until atmosphere has been checked. Avoid smoking, bare lights, heat or ignition sources. When handling, DO NOT eat, drink or smoke. Vapor may ignite on pumping or pouring due to static electricity. DO NOT use plastic buckets. Ground and secure metal containers when dispensing or pouring product. Use spark-free tools when handling. Avoid contact with incompatible materials. Keep containers securely sealed. Avoid physical damage to containers. Always wash hands with soap and water after handling. Work clothes should be laundered separately. Use good occupational work practices. Observe manufacturer's storing and handling recommendations. Atmosphere should be regularly checked against established exposure standards to ensure safe working conditions.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

AIRBORNE EXPOSURE LIMITS: See Section 2 above.

IPA:

- OSHA Permissible Exposure Limit (PEL): 400 ppm (TWA)
- ACGIH Threshold Limit Value (TLV):
200 ppm (TWA), 400 ppm (STEL), A4 - not classifiable as a human carcinogen

VENTILATION SYSTEM: A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Please refer to the ACGIH document, Industrial Ventilation, A Manual of Recommended Practices, most recent edition, for details.

PERSONAL RESPIRATORS (NIOSH APPROVED): If the exposure limit is exceeded and engineering controls are not feasible, wear a supplied air, full-facepiece respirator, airtight hood, or full-facepiece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134). Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc. See 29CFR1910.134 for details.

RESPIRATORY PROTECTION: For unknown vapor concentrations use a positive-pressure, pressure-demand, self-contained breathing apparatus (SCBA). For known vapor concentrations above the occupational exposure guidelines (see below), use a NIOSH-approved organic vapor respirator if adequate protection is provided. Protection factors vary depending upon the type of respirator used. Respirators should be used in accordance with OSHA requirements (29 CFR 1910.134).

SKIN PROTECTION: Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Barrier cream with polyethylene gloves or Butyl rubber gloves or Neoprene rubber gloves. Safety footwear. Butyl and Neoprene Gloves for best protection.

EYE PROTECTION: Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area. Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them.

9. PHYSICAL AND CHEMICAL PROPERTIES

FORM: liquid.

ODOR: Rubbing alcohol

SOLUBILITY IN WATER: soluble

MELTING/FREEZING POINT: -89°C (-128°F)

AUTO IGNITION TEMPERATURE: 425°C (797°F)

pH: N/A

% VOLATILES BY VOLUME @ 21C (70F): 100

Molecular weight: 60.10

COLOR: Clear / colorless

BOILING POINT: 82°C (180°F) @ 760 mm Hg

SPECIFIC GRAVITY: 0.787 at 20 °C (Water =1)

Evaporation Rate (BuAc=1): 2.83

FLASH POINT: 12 °C (54 °F) CC

VAPOR PRESSURE: 33 @ 20C (68F)

VAPOR DENSITY: 2.1 (air = 1)

Molecular Formula: C₃H₈O

10. STABILITY AND REACTIVITY

STABILITY: Stable under ordinary conditions of use and storage. Heat and sunlight can contribute to instability.

CONDITIONS TO AVOID: Heat, flames, ignition sources and incompatibles.

POLYMERIZATION: Hazardous polymerization will not occur.

INCOMPATIBILITY WITH OTHER MATERIALS: Heat, flame, strong oxidizers, acetaldehyde, acids, chlorine, ethylene oxide, hydrogen-palladium combination, hydrogen peroxide-sulfuric acid combination, potassium tert-butoxide, hypochlorous acid, isocyanates, nitroform, phosgene, aluminum, oleum and perchloric acid.

DECOMPOSITION: Carbon dioxide and carbon monoxide may form when heated to decomposition.

11. TOXICOLOGICAL INFORMATION**Toxicological Data:**

IPA - Oral rat LD50: 5045 mg/kg; skin rabbit LD50: 12.8 gm/kg; inhalation rat LC50: 16,000 ppm/8-hour; investigated as a tumorigen, mutagen, reproductive effector.

Carcinogenicity:

Carcinogenic effects: A4 (Not classifiable for humans or animals.) by ACGIH.

Mutagenic effects: Not available. Teratogenic effects: Not available.

Cancer Lists

---NTP Carcinogen---

Ingredient**Known****Anticipated****IARC Category**

IPA (67-63-0)

No

No

3

12. ECOLOGICAL INFORMATION

ENVIRONMENTAL FATE: When released into the soil, this material is expected to quickly evaporate. When released into the soil, this material may leach into groundwater. When released into the soil, this material may biodegrade to a moderate extent. When released to water, this material is expected to quickly evaporate. When released into the water, this material is expected to have a half-life between 1 and 10 days. When released into water, this material may biodegrade to a moderate extent. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life between 1 and 10 days. When released into the air, this material may be removed from the atmosphere to a moderate extent by wet deposition.

ENVIRONMENTAL TOXICITY: The LC50/96-hour values for fish are over 100 mg/l. This material is not expected to be toxic to aquatic life.

13. DISPOSAL CONSIDERATIONS

WASTE DISPOSAL: Whatever cannot be saved for recovery or recycling should be handled as a non hazardous waste and sent to an approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of material in accordance with federal, state and local requirements.

CONTAMINATED MATERIALS: Wash contaminated clothing before reuse.

14. TRANSPORTATION INFORMATION

Domestic (Land, D.O.T.), International (Water, I.M.O.), International (Air, I.C.A.O.)

CLASS: 3 – Flammable Liquid
 PRODUCT LABEL: IPA
 UN NUMBER: 1219
 PACKING GROUP: II – Medium Danger
 D.O.T. SHIPPING NAME: ISOPROPANOL - Flammable Liquids, N.O.S.
 PRODUCT RQ (LBS): N/A
 ERG Guide Number: N/A
 SUPPLEMENTAL HAZARD: N/A
 Vessel Stowage: Location: B



15. REGULATORY INFORMATION

FEDERAL REGULATORY STATUS

Chemical Inventory Status - Part 1

Ingredient	<u>TSCA</u>	<u>EC</u>	<u>Japan</u>	<u>Australia</u>
Isopropyl Alcohol	YES	YES	YES	YES

Chemical Inventory Status - Part 2

Ingredient	<u>Korea</u>	<u>DSL</u>	<u>CANADA</u>	<u>Phil.</u>
Isopropyl Alcohol	YES	YES	<u>NDSL</u>	YES
			NO	

Federal, State & International Regulations - Part 1

	<u>-SARA 302-</u>	<u>-SARA 313-</u>
Ingredient	<u>RQ</u>	<u>TPQ</u>
Isopropyl Alcohol	NO	NO
		<u>List</u>
		YES
		<u>Chemical Catalog</u>
		NO

Federal, State & International Regulations - Part 2

	<u>CERCLA</u>	<u>-RCRA-</u>	<u>-TSCA-</u>
Ingredient		<u>261.33</u>	<u>8(d)</u>
Isopropyl Alcohol	NO	NO	NO

Chemical Weapons Convention: No **TSCA 12(b):** No **CDTA:** Yes

Clean Water Act (CWA) 307: No products were found.
 Clean Water Act (CWA) 311: No products were found.
 Clean Air Act (CAA) 112 accidental release prevention: No products were found.
 Clean Air Act (CAA) 112 regulated flammable substances: No products were found.
 Clean Air Act (CAA) 112 regulated toxic substances: No products were found.

SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No
 Reactivity: No (Pure / Liquid)

STATE REGULATIONS:

Pennsylvania RTK: IPA
New Jersey: IPA

PROP 65 - WARNING: NONE

THIS PRODUCT DOES NOT CONTAIN A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

RCRA 40 CFR: Listed U002 Ignitable Waste.

Australian Hazchem Code: 2[S]2

Poison Schedule: None allocated.

WHMIS: This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

This material or all of its components are listed on the Inventory of Existing Chemical Substances under the Toxic Substance Control Act (TSCA). This material or all of its components are listed on the Canadian Domestic Substances List (DSL). This material or all of its components are listed (or considered as having been notified) on the European Inventory of Existing Chemical Substances (EINECS). Other inventory lists: Korea (TCCL), Australia (AICS), China (Draft), PICCS (Philippines-RA6969), Japan (ENCS METI/MOL).

16. OTHER INFORMATION

Label Requirements: WARNING! FLAMMABLE LIQUID AND VAPOR. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM. MAY BE HARMFUL IF ABSORBED THROUGH SKIN. MAY CAUSE IRRITATION TO SKIN.

Prepared By: Donato Polignone

Part Number: IPA

Approved By: NuGeneration Technologies, LLC, Environmental Health and Safety Department

Approval Date: March 15, 2011

Supersedes Date: October 21, 2009

ADDITIONAL INFORMATION:

The data in this Material Safety Data Sheet relates only to the specific material designated herein. It does not relate to use in combination with any other material or in any process. This Material Safety Data Sheet (MSDS) has been reviewed to fully comply with the guidance contained in the ANSI MSDS standard (ANSI Z400.1-2004)

This information is furnished without warranty, expressed or implied, except that it is accurate to the best knowledge of NuGeneration Technologies, LLC. The data on this sheet are related only to the specific material designated herein. NuGeneration Technologies, LLC assumes no legal responsibility for use or reliance upon these data.

To the best of our knowledge, the information contained herein is accurate. However, neither the above named supplier nor any of its subsidiaries assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

END OF MSDS