SAFETY DATA SHEET (SDS)
ISOPROPANOL 99%

1. IDENTIFICATION

Product Name:	Isopropanol
Other Name or Code:	3101200, 2-Propanol, Propan-2-ol, Propanol-2
Use:	Cleaning solvent for 3D resins
Supplier Name:	DenPlus Inc.
Address:	333-M Chemin du Tremblay Boucherville, QC, Canada, J4B 7M1
Phone Number for Information:	450.641.1330
Emergency Phone Number:	613.996.6666
Anti-Poison Center of Quebec	1.800.463.5060

2. HAZARDS IDENTIFICATION

2.1 Classification

Flammable liquid - Category 2	H225	Highly flammable liquid and vapor
Acute toxicity – Oral – Category 4	H302	Harmful if swallowed
Serious eye damage/eye irritation - Category 2A	H319	Cause serious eye irritation
Specific target organ toxicity (STOT) - single exposure - category 3	H336	May cause drowsiness or dizziness

2.2 Label elements

Signal word: Danger

Hazard statements:

H225	Highly flammable liquid and vapor
H302	Harmful if swallowed
H319	Cause serious eye irritation
H336	May cause drowsiness or dizziness

Precautionary statements:	P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No Smoking.
	P233	Keep container tightly closed.
	P235	Keep cool.
	P240	Ground and bond container and receiving equipment.
	P241	Use explosion-proof electrical/ ventilating/ lighting/ equipment.
	P242	Use non-sparking tools.
	P243	Take action to prevent static discharges.
	P261	Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.
	P264	Wash skin thoroughly after handling.
	P270	Do not eat, drink or smoke when using this product.
	P271	Use only outdoors or in well-ventilated area.
	P280	Wear protective gloves/protective clothing/eye protection/face protection.
	P303+P361+P353	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.
	P304+P340+P312	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor/ physician.
	P301+P312	IF SWALLOWED: Call a POISON CENTER/ doctor. Rinse mouth
	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.
	P370+P378	In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.
	P403+P233+P235	Store in well-ventilated place. Keep container tightly closed. Keep cool.
	P405	Store locked up.
	P501	Dispose of contents/ container to an approved disposal plant.

3. INFORMATION ON INGREDIENTS

Hazardous ingredients	CAS	Concentration range (by weight)
Isopropanol	67-63-0	90 to 100 %

4. FIRST-AID MEASURES

4.1 Description of first aid measures

Inhalation	IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a poison center or doctor if you feel unwell.
Skin contact	IF ON SKIN: Rinse well with water. If on clothes, remove clothes.
Eye Contact	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Obtain immediate medical attention.
Ingestion	IF SWALLOWED: Rinse mouth. Drink plenty of water. Obtain immediate medical attention.

4.2 Most important symptoms and effects, both acute and delayed

Causes serious eye irritation. Low toxicity. May cause corneal injury. May cause lachrymation (excessive tears). May cause pain disproportionate to the level of irritation to eye tissue. Aspiration into the lungs during ingestion or vomiting may lead to chemical pneumonitis. May cause central nervous system effects, such as headache, nausea, vomiting, abdominal pain, dizziness, confusion and breathing difficulties. Small amounts swallowed incidental to normal handling operations are not likely to cause injury. Prolonged skin contact is unlikely to result in absorption of harmful amounts. Swallowing larger amounts may cause injury. Vapor may cause eye irritation experienced as mild discomfort and redness. May cause drying and flaking of the skin. Prolonged exposure not likely to cause significant skin irritation. Signs and symptoms of excessive exposure may include: facial flushing, low blood pressure, irregular heartbeats. With good ventilation, single exposure is not likely to be hazardous. In poorly ventilated areas, vapors or mists may accumulate and cause respiratory irritation. Prolonged excessive exposure may cause adverse effects. Excessive exposure (400 ppm) to isopropanol may cause eye, nose and throat irritation. Incoordination, confusion, hypotension, hypothermia, circulatory collapse, respiratory arrest and death may follow a longer duration or higher levels. Observations in animals include middle ear lining damage upon exposure to vapors of isopropanol. However, the relevance of this to humans is unknown.

4.3 Indication of any immediate medical attention and special treatment needed

Treatment based on sound judgment of physician and individual reactions of patient. Hemodialysis may be of benefit if substantial amounts have been ingested and the patient is showing signs of intoxication. Consider hemodialysis for patients with persistent hypotension or coma unresponsive to standard therapy (isopropanol levels >400 – 500 mg/dl). (Goldfrank 1998, King and al, 1970). Because rapid absorption may occur through lungs if aspirated and cause systemic effects, the decision of whether to induce vomiting or not should be made by a physician. If stomach lavage is performed, suggest endotracheal and/or esophageal control. Danger from lung aspiration must be weighed against toxicity when considering emptying to stomach.

5. FIREFIGHTING MEASURES

5.1 Extinguishing media

In case of fire, use water fog or fine spray, carbon dioxide (CO_2), dry chemical foam. Alcohol resistant foams (ATC type) are preferred if available. General purpose synthetic foams (including AFFF) or protein foams may function, but much less effectively. Do not use water stream, which will spread fire.

5.2 Special hazards arising from the substance or mixture

Use water spray to cool fire-exposed containers and structures. Vapors are heavier than air and may accumulate in low areas. Vapors may travel along the ground to be ignited at distant locations. Isolate and restrict area access. Move containers from fire area if you can do without risk. Stop leak only if safe to do so. Container may rupture from gas generation in a fire situation. Fight fire from safe distance and from a protected location. Flammable concentrations of vapor can accumulate at the temperatures above flash point. Use proper bonding and grounding during product transfer. NEVER use a water jet directly on the fire because it may spread fire to a larger area. Flammable mixtures may exist within the vapor space of containers at room temperature. Keep out of low areas where gases (fumes) can accumulate. Flammable mixtures of this product are readily ignited even by static discharge. Use vapor spray to disperse vapors; re-ignition is possible. When product is stored in closed containers, a flammable atmosphere can develop. Use caution and test if material is burning before entering area. Material burns with invisible flame.
Hazardous decomposition products depend upon temperature, air supply, and the presence of other materials.

5.3 Advice for firefighters

Move containers from fire area if you can do it without risk. Use water spray to keep fire-exposes containers cool. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear. Use personal protection equipment.

6. ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate personnel to safe areas. Use personal protective equipment as required. See section 8 for more information. Avoid contact with skin, eyes or clothing. Ensure adequate ventilation. Keep people away from and upwind of spill/leak. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Pay attention to flashback. Take precautionary measures against static discharges, All equipment used when handling the product must be grounded. Do not touch or walk through spilled material.

6.2 Environmental precautions

Refer to protective measures listed in sections 7 and 8. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

6.3 Methods and material for containment and cleaning up

Stop leak if you can do it without risk. Do not touch or walk through spilled material. A vapor suppressing foam may be used to reduce vapors. Dike far ahead of spill to collect runoff water. Keep out of drains, sewers, ditches and waterways. Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.
Take precautionary measures against static discharges. Dam up. Soak up with inert absorbent material. Pick up and transfer to properly labeled containers.

6.4 Reference to other sections
See sections 8 and 13.

7. HANDLING AND STORAGE

7.1 Precautions for safe handling
Avoid contact with eyes, skin and clothing. Vapors from this product and may travel or be moved by air currents and ignited by pilot lights, other flames, smoking, sparks, heaters, electrical equipment, static discharges or other ignition sources at location distant from product handling point and may flash back explosively. Wash thoroughly after handling. Keep away from heat sparks and flame. Do not ingest. Do not cut, drill grind, weld or perform similar operations on or near containers. Empty containers may contain hazardous product residues. Bond and ground containers during transfer operations. No smoking or open flame in storage, use or handling areas. Use non-sparking tools. Avoid breathing mist or vapor. Never use air pressure for transferring product. Vapors are heavier than air and will collect in low areas. Do not enter confined spaces unless adequately ventilated.

7.2 Conditions for safe storage, including any incompatibilities
Store in a cool, dry, well ventilated area, away from heat and ignition sources. Place away from incompatible materials. Keep away from direct sunlight. Peroxides can form if this product is stored in contact with air. Peroxides can be explosive. Shelf life: 20 months in original sealed container.

7.3 Specific end use(s)

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

8.1 Control parameters:

Substance	TWA	TWA	STEL	STEL
Isopropanol	985 mg/m^3	400 ppm	1230 mg/m^3	500 ppm

TWA: Time-weighted average (8 h)
STEL: Short-term exposure limit (15 min)

8.2 Exposure controls

Appropriate engineering controls
Electrical and mechanical equipment should be explosion proof. Local ventilation recommended where mechanical ventilation is ineffective in controlling air borne concentrations below the recommended occupational exposure limit. Make up air should always be supplied to balance air exhausted (either generally or locally). For personnel entry into confined spaces (i.e. bulk storage tanks) a proper confined space entry procedure must be followed including ventilation and testing of tank atmosphere. Concentrations in air should be maintained below lower explosive limit at all times or below the recommended threshold limit value if unprotected personnel are involved. Mechanical ventilation is recommended for all indoor situations to control fugitive emissions.

Eye/face protection	Tight sealing safety goggles.
Skin protection	Wear suitable gloves and protective clothing. Suitability of gloves should be confirmed with glove manufacturer. Change gloves, if contamination occurs or duration of activity exceeds breakthrough time. Breakthrough time of the glove material: refer to the information provided by the gloves' producer.
Respiratory protection	Use a NIOSH-approved chemical cartridge respirator with organic vapor cartridges or use a NIOSH-approved supplied-air respirator. For high airborne concentrations, use a NIOSH-approved supplied-air respirator, either self-contained or airline breathing apparatus, operated in positive pressure mode. NIOSH approved supplied air respirator when airborne concentrations exceed exposure limits. A dust mask is not acceptable.

Environmental exposure controls
Ensure proper process control to ensure releases to air are within local permits.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Liquid colorless
Odor	Alcohol
pH (Value)	Not applicable
Melting point (°C)	-89
Boiling Point (°C)	88
Flash Point (°C)	12
Flammability (solid, gas)	Not applicable
Flammable Limits (Lower) (%v/v)	2
Flammable Limits (Upper) (%v/v)	12
Vapor pressure (Pascal)	3300 at 20°C
Solubility (Water)	Completely miscible
Solubility (Other)	No data available
Partition Coefficient (n-Octanol/water)	0.05
Auto Ignition Temperature (°C)	423
Viscosity (mPa. s)	No data available
Explosive properties	No information available
Oxidizing properties	No information available
Density (g/ml)	0.78 – 0.79 at 20 °C

10. STABILITY AND REACTIVITY

10.1 Reactivity
Stable

10.2 Chemical stability
Stable under storage at normal ambient temperatures.

10.3 Possibility of hazardous reactions
No additional remark.

10.4 Conditions to avoid
Product can decompose at elevated temperatures. Avoid contact with heat, sparks, open flame, and static discharge.

10.5 Incompatible materials
Strong oxidizers. Strong acids. Aldehydes, Halogens, Halogenated organics.

10.6 Hazardous decomposition products
Hazardous decomposition products depend upon temperature, air supply, and the presence of other materials.

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Isopropanol is moderate to severe eye irritant and a very mild skin irritant. Repeated or prolonged skin contact can cause drying and cracking of the skin (dermatitis). There are no reports of harmful effects developing following short-term exposure to isopropanol. Exposure produced mild – moderate irritation of the nose and throat. It can probably cause central nervous system (CNS) depression, based on animal information and comparison to related alcohols. Symptoms may include headache, nausea, dizziness, vomiting and incoordination. High exposures may result in unconsciousness and death. Ingestion of large amounts can result in symptoms of CNS depression. Isopropanol can probably be inhaled into lungs (aspirated) during ingestion or vomiting. Aspiration can result in severe, life-threatening lung damage. In rats and mice long-term exposure by inhalation or ingestion has produced decreased body weight, a reversible increase in motor activity, increased liver weight, and signs of central nervous system (CNS) depression. Decreased testes weight has been observed in mice, while increased testes weight has been observed in rats exposed to high concentrations. Kidney injury has been observed in rats (especially males) and mice exposed to high concentrations. These effects are believed to be species specific and unlikely to occur in humans. Observations in animals include: lethargy. Isopropanol toxicity is synergistic with chloroform and carbon tetrachloride resulting hepatotoxicity.

ATEmix tested

Source	Route	Species	Value
	Oral	Rat	LD50 1870 mg/Kg
	Dermal	Rabbit	LD50 5040 mg/Kg
	Inhalation	Rat	CL50 726000mg/m³ (4 h)

Skin corrosion/irritation	Prolonged skin contact is unlikely to result in absorption of harmful amounts. May cause drying and flaking of the skin. Prolonged exposure not likely to cause significant skin irritation.
Serious eye damage/eye irritation	Causes serious eye irritation. May cause corneal injury. May cause lachrymation (excessive tears). May cause pain disproportionate to the level of irritation to eye tissue. Vapor may cause eye irritation experienced as mild discomfort and redness.
Sensitization	Based on available data, the classification criteria are not met.
Carcinogenicity	Based on available data, the classification criteria are not met.
Reproductive toxicity	Based on available data, the classification criteria are not met.
STOT - single exposure	May cause drowsiness or dizziness.
STOT - repeated exposure	No information available.
Aspiration hazard	Based on available data, the classification criteria are not met.

12. ECOLOGICAL INFORMATION

12.1 Toxicity

This product is not ecotoxic if properly used and handled.

Aquatic toxicity	Dose	Hours
Acute fish toxicity	LC50 1000 mg/l	96
Acute algae toxicity	ErC50 9640 mg/l	96
Acute crustacea toxicity	EC50 13299 mg/l	48

12.2 Persistence and degradability

This product has not been tested.

12.3 Bioaccumulative potential

This product has not been tested.

12.4 Mobility in soil

This product has not been tested.

12.5 Results of PBT and vPvB assessment

This product has not been tested.

12.6 Other adverse effects

None known.

13. DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Disposal of all wastes must be done in accordance with municipal, provincial and federal regulations. 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. Recover or recycle if possible. Empty containers should be recycled or disposed of through an approved waste management facility. Drain container thoroughly. After draining. Vent in a safe place away from sparks and fire. Residues may cause in explosion hazard. Do not puncture, cut or weld uncleaned drums.

14. TRANSPORTATION CONSIDERATIONS

14.1 UN number
UN1219

14.2 UN Proper Shipping Name
Isopropanol

14.3 Transport hazard class(es)
Class 3

14.4 Packing group
II

14.5 Environmental hazards
Marine Pollutant No.

14.6 Special precautions for user

14.7 Transport in bulk according to Annex II of MARPOL and the IBC Code
Not applicable.

15. REGULATORY INFORMATION

WHMIS 2015
Canadian Hazardous Products Regulations (SORS2015-17)
Canadian Hazardous Products Act (R.S.C., 1985, c. H-3)
Hazardous Products Information Regulation (Quebec S-2.1, r. 8.1)

16. OTHER INFORMATION

Date of revision : January 20, 2020

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