

SAFETY DATA SHEET (SDS)

SDS DATE : Aug, 2021

Section 1. Product And Company Identification

1. **Product identifier**
 - 1.1. Product Name : PicoSens™ Hydroxyproline Assay Kit
 - 1.2. Product Code :BM-HYP-100
2. **Details of the supplier of the safety data sheet**
 - 2.1. Company: BIOMAX, Inc.,
 - 2.2. Address : Keumkang Penterium IX Tower CORE-C 7F, 46, Galmaesunhwan-ro 166beon-gil, Guri-si, Gyeonggi-do, Republic of Korea
 - 2.3. Telephone: +82-2-3296-3158
 - 2.4. Emergency Phone : +82-2-3296-3159
 - 2.5. FAX: +82-2-973-2858
3. **Product use**
 - 3.1. For research use only.

Section 2. Hazard identification

Component	Description	Volume	Safety Information
Oxidation Buffer	Proprietary Buffer	10 mL	See below
Chloramine T Concentrate	Liquid	600 µL	See below
Perchloric acid/Isopropanol Solution	Liquid	5 mL	See below
DMAB Concentration	In DMSO	5 mL	No hazards
Hydroxyproline Standard	Liquid	100 µL	No hazards

1.1 Isopropanol:

Emergency Overview

OSHA Hazards: Flammable liquid, Target organ effect, Irritant

Target Organs: Nerves, Kidney, Cardiovascularsystem, Gastrointestinal tract, Liver

GHS Classification: Flammable liquids (Category 2)

Skin irritation (Category 3)

Eye irritation (Category 2A)

Specific target organ toxicity – single exposure (Category 3)

GHS Label elements, including precautionary statements

Pictogram:



Signal word: Danger

Hazard statement(s): H225 Highly flammable liquid and vapour.
 H316 Causes mild skin irritation.
 H319 Causes serious eye irritation.
 H336 May cause drowsiness or dizziness.

Precautionary statement(s):

P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
 P261 Avoid breathing dust/fumes/gas/mist/vapors/spray.
 P280 Wear protective gloves/protective clothing/eye protection/face protection.
 P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

HMIS Classification

Health hazard: 2

Chronic Health Hazard: *

Flammability: 3

Physical hazards: 0

NFPA Rating

Health Hazard: 2

Fire: 3

Reactivity Hazard: 0

Potential Health Effects

Inhalation: May be harmful if inhaled. Causes respiratory tract irritation. Vapors may cause drowsiness or dizziness.

Skin: May be harmful if absorbed through skin. Causes skin irritation.

Eyes: Causes eye irritation.

Ingestion: May be harmful if swallowed.

1.2 **Chloramine T:**

Emergency Overview

OSHA Hazards: Target organ effect, Harmful by ingestion, Respiratory sensitizer, Corrosive

Target Organs: Blood, Lungs

GHS Classification: Acute toxicity, Oral (Category 4)

Skin corrosion (Category 1B)

Serious eye damage (Category 1)

Respiratory sensitization (Category 1)

GHS Label elements, including precautionary statements

Pictogram:



Signal word: Danger

Hazard statement(s): H302 Harmful if swallowed

H314 Causes severe skin burns and eye damage.

H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Precautionary statement(s): P260 Do not breathe dust or mist.

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P285 In case of inadequate ventilation wear respiratory protection.

P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.

P301+P330+P331 IF SWALLOWED: rinse mouth. Do NOT induce vomiting.

P303+P361+P353 IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower.

P304+P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.

P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do.

Continue rinsing.

P310 Immediately call a POISON CENTER or doctor/physician.

P363 Wash contaminated clothing before reuse.

HMIS Classification

Health hazard: 3

Chronic Health Hazard: *

Flammability: 1

Physical hazards: 0

NFPA Rating

Health Hazard: 3

Fire: 1

Reactivity Hazard: 0

Potential Health Effects

Inhalation: May be harmful if inhaled. Causes respiratory tract irritation. Vapors may cause drowsiness or dizziness.

Skin: May be harmful if absorbed through skin. Causes skin irritation.

Eyes: Causes eye irritation.

Ingestion: May be harmful if swallowed.

1.3 **Perchloric acid:**

Emergency Overview

OSHA Hazards: Oxidizer, Harmful by ingestion, Corrosive

GHS Classification: Oxidizing liquids (Category 1), H271

Corrosive to metals (Category 1), H290

Acute toxicity, Oral (Category 4), H302

Skin corrosion (Category 1A), H314

Serious eye damage (Category 1), H318

Specific target organ toxicity - repeated exposure (Category 2), Thyroid, H373

GHS Label elements, including precautionary statements

Pictogram:



Signal word: Danger

Hazard statement(s): H271 May cause fire or explosion; strong oxidizer.

H290 May be corrosive to metals.

H302 Harmful if swallowed.

H314 Causes severe skin burns and eye damage.

H373 May cause damage to organs (Thyroid) through prolonged or repeated exposure.

Precautionary statement(s): P210 Keep away from heat.

P220 Keep/Store away from clothing/ combustible materials.

P221 Take any precaution to avoid mixing with combustibles.

P234 Keep only in original container.

P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.

P264 Wash skin thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

P283 Wear fire/ flame resistant/ retardant clothing.

P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/doctor if you feel unwell. Rinse mouth.

P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a poison center, doctor.

P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to remove. Continue rinsing. Immediately call a poison center, doctor.

P306 + P360 IF ON CLOTHING: rinse immediately contaminated clothing and skin with plenty of water before removing clothes.

P314 Get medical advice/ attention if you feel unwell.

P363 Wash contaminated clothing before reuse.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

P371 + P380 + P375 In case of major fire and large quantities: Evacuate area. Fight fire remotely due to the risk of explosion.

P390 Absorb spillage to prevent material damage.

P405 Store locked up.

P406 Store in corrosive resistant container with a resistant inner liner.

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

HMIS Classification

Health hazard: 3

Flammability: 1

Physical hazards: 3

NFPA Rating

Health Hazard: 3

Fire: 1

Reactivity Hazard: 3

Special Hazard: OX

Potential Health Effects

Inhalation: May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract

Skin: May be harmful if absorbed through skin. Causes skin irritation.

Eyes: Causes eye irritation.

Ingestion: May be harmful if swallowed.

1.4 4-(Dimethylamino)benzaldehyde (DMAB):

Emergency Overview

GHS Classification: Skin sensitization (Sub-category 1B), H317

GHS Label elements, including precautionary statements

Pictogram:



Signal word: Warning

Hazard statement(s): H317 May cause an allergic skin reaction.

Precautionary statement(s): P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.

P272 Contaminated work clothing must not be allowed out of the workplace.

P280 Wear protective gloves.

P302 + P352 IF ON SKIN: Wash with plenty of soap and water.

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P363 Wash contaminated clothing before reuse.

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

HMIS Classification

Health hazard: 2
Chronic hazard: *
Flammability: 3
Physical hazards: 0

NFPA Rating

Health Hazard: 2
Fire: 3
Reactivity Hazard: 0

Potential Health Effects

Inhalation: May be harmful if inhaled. Causes respiratory tract irritation. Vapors may cause drowsiness or dizziness.
Skin: May be harmful if absorbed through skin. Causes skin burns.
Eyes: Causes severe eye burns.
Ingestion: May be harmful if swallowed.

1.1 **DMSO**

Emergency Overview

OSHA Hazards: Combustible liquid, Target organ effect

Target Organs: Eyes, Skin

GHS Classification: : Flammable liquids (Category 4)

GHS Label elements, including precautionary statements

Pictogram:



Signal word: Warning

Hazard statement(s): H227 Combustible liquid

Precautionary statement(s): none

HMIS Classification

Health hazard: 0
Chronic Health Hazard: *
Flammability: *
Physical hazards: 0

NFPA Rating

Health Hazard: 0
Fire: 2
Reactivity Hazard: 0

Potential Health Effects

Inhalation: May be harmful if inhaled. Causes respiratory tract irritation.
Skin: May be harmful if absorbed through skin. Causes skin irritation.
Eyes: Causes eye irritation.
Ingestion: May be harmful if swallowed.
Aggravated Medical Condition: Avoid contact w/DMSO solutions containing toxic materials or materials with unknown toxicological properties. DMSO is readily absorbed through skin and may carry such materials into the body

Section 3. Composition/Information on ingredients

Component	CAS Number	EC-No.	Molecular Weight	Formula	Concentration
Isopropanol	67-63-0	200-661-7	60.10	C ₃ H ₈ O	<90%
Chloramine T	7080-50-4	204-854-7	281.69	C ₇ H ₇ ClNNaO ₂ S · 3H ₂ O	<15%
Perchloric acid	7601-90-3	231-512-4	100.46	HClO ₄	<15%
DMAB	100-10-7	202-819-0	149.19	C ₉ H ₁₁ NO	<20%
DMSO	67-68-5	200-664-3	78.13	C ₂ H ₆ OS	<80%

Section 4. First Aid Measures

General advice: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact: Wash off with soap and plenty of water. Consult a physician.

In case of eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed: DO NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Section 5. Fire-fighting Measures

Isopropanol:

Conditions of flammability: Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for firefighters: Wear self-contained breathing apparatus for firefighting if necessary.

Hazardous combustion products: Hazardous decomposition products formed under fire conditions – carbon oxides.

Further information: Use water spray to cool unopened containers

Chloramine T:

Suitable extinguishing media: Water Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media For this substance/mixture no limitations of extinguishing agents are given.

Special protective equipment for firefighters: Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Hazardous combustion products: Carbon oxides, Nitrogen oxides (NOx), Sulfur oxides, Hydrogen chloride gas, Sodium oxides Combustible.

Vapors are heavier than air and may spread along floors. Forms explosive mixtures with air on intense heating. Development of hazardous combustion gases or vapours possible in the event of fire.

Further information: Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

Perchloric acid:

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Unsuitable extinguishing media: High volume water jet

Special protective equipment for firefighters: Wear self-contained breathing apparatus for firefighting if necessary.

Hazardous combustion products: Chlorine, Hydrogen chloride gas, Container explosion may occur under fire conditions. Not combustible

Further information: Use water spray to cool unopened containers

4-(Dimethylamino)benzaldehyde (DMAB):

Suitable extinguishing media: Water Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media For this substance/mixture no limitations of extinguishing agents are given

Special protective equipment for firefighters: Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

Hazardous combustion products: Carbon oxides, Nitrogen oxides (NOx), Sulfur oxides, Hydrogen chloride gas, Sodium oxides Combustible.

Vapors are heavier than air and may spread along floors. Forms explosive mixtures with air on intense heating.

Development of hazardous combustion gases or vapours possible in the event of fire.

Further information: Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system

DMSO:

Suitable extinguishing media: For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.

Special protective equipment for firefighters: Wear self-contained breathing apparatus for firefighting if necessary.

Hazardous combustion products: Hazardous combustion products formed under fire conditions – no data available.

Further information: Use water spray to cool unopened containers

Section 6. Accidental Release Measures

Personal precautions: Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Discharge into the environment must be avoided.

Methods for cleaning up: Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

Section 7. Handling And Storage

Precautions for safe handling

Avoid contact with skin and eyes. Avoid inhalation of vapor or mist. Use explosion-proof equipment. Keep away from sources of ignition (no smoking).

Take measures to prevent the buildup of electrostatic charge.

Conditions for safe storage

Keep container tightly closed in a dry and well-ventilated place.

Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Recommended storage temperature: 4°C.

Section 8: Exposure Controls/Personal Protection

Isopropanol:

Components	CAS-No.	Value	Control parameters	Basls
2-propanol	67-63-0	TWA	200 ppm	USA. ACGIH Threshold Limit Values (TLV)
Remark :	Eye & upper respiratory tract irritation. Central nervous system impairment. Not classifiable as a human carcinogen.			
		STEL	400 ppm	USA. ACGIH Threshold Limit Values (TLV)
	Eye & upper respiratory tract irritation. Central nervous system impairment. Not classifiable as a human carcinogen.			
		TWA	400 ppm 980 mg/m ³	USA. Occupational Exposure Limits (OSHA): Table Z-1 Limits for Air Contaminants - 1910.1000
		STEL	500 ppm 1,225 mg/m ³	USA. Occupational Exposure Limits (OSHA): Table Z-1 Limits for Air Contaminants - 1910.1000

		TWA	400 ppm 980 mg/m ³	USA. Occupational Exposure Limits (OSHA): Table Z-1 Limits for Air Contaminants - 1910.1000
The value in mg/ m ³ is approximate.				
		TWA	400 ppm 980 mg/m ³	USA. NIOSH Recommended Exposure Limits
		ST	500 ppm 1,225 mg/m ³	USA. NIOSH Recommended Exposure Limits

DMSO:

Components	CAS-No.	Value	Control parameters	Basis
Dimethyl sulfoxide	67-68-5	TWA	250 ppm	USA. Workplace Environmental Exposure Levels (WEEL)

Chloramine T, Perchloric acid:

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection

Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Eye protection

Face shield and safety glasses. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin and body protection

Complete suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

4-(Dimethylamino)benzaldehyde (DMAB):

Personal protective equipment

Respiratory Protection

Respiratory protection should be worn when there is a potential to exceed the exposure limit requirements or guidelines. If there are no applicable exposure limit requirements or guidelines, wear respiratory protection when adverse effects, such as respiratory irritation or discomfort have been experienced, or where indicated by your risk assessment process. In misty atmospheres, use an approved particulate respirator. The following should be effective types of air-purifying respirators: Organic vapor cartridge with a particulate pre-filter.

Hand protection

Use gloves chemically resistant to this material. Examples of preferred glove barrier materials include: Butyl rubber, Chlorinated polyethylene, Polyethylene.

Eye protection

Use chemical goggles.

Skin and body protection

Use protective clothing chemically resistant to this material. Selection of specific items such as face shield, boots, apron, or full body suit will depend on the task

Section 9: Physical And Chemical Properties

Property	Isopropanol	Chloramine T	Perchloric acid	DMAB	DMSO
Appearance:	Liquid	Off-white powder	Liquid	crystalline	Clear liquid
pH:	No data available	8-10 at 50 g/l at 20 °C (68 °F)	No data available	No data available	No data available
Water Solubility:	Completely soluble	Soluble	completely miscible	No data available	No data available
Other Solubility:	No data available	No data available	No data available	No data available	
Boiling Point (°C):	82 °C (180 °F)	No data available	ca. 203 °C ca.397°F at 1,013 hPa	ca 301 °C ca. 590°F at 1,013 hPa	No data available
Melting Point (°C):	-89.5	167-170 °C (333-338°F)	-18 °C (-0.40 °F)	72-75 °C (162-167°F)- lit	372.2 °F (189 °C)
Flash Point (°C):	12 °C (53.6°F) - closed cup	192 °C (378 °F) - closed cup	No data available	164 °C (327 °F) - closed cup	64.4 °F (18 °C)
Ignition Temperature (°C):	82 °C (180 °F)	No data available	No data available	No data available	188.6 °F (87.0 °C)

Density:	0.785 g/cm ³ at 25 °C (77 °F)	No data available	No data available	No data available	No data available
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Section 10: Stability And Reactivity

Property	Isopropanol	Chloramine T	Perchloric acid	DMAB	DMSO
Chemical Stability:	Stable under recommended storage conditions				
Conditions to Avoid:	Heat, flames, sparks, extremes of temperature and direct sunlight	No data available	No data available	May discolor on exposure to air and light. Strong heating.	Heat, flames, sparks
Materials to Avoid:	Oxidizing agents, acid anhydrides, aluminum, halogenated compounds, acids	Do not store near acids, strong oxidizing agents, ammonia	Strong bases, strong acids, amines, phosphorus halides, alcohols, organic materials, powdered metals, strong	Strong bases, Strong oxidizing agents	Acid chlorides, phosphorus halides, strong acids, strong oxidizing agents, strong reducing agents
Hazardous decomposition products:	Carbon oxides	Carbon oxides, nitrogen oxides, sulfur oxides, hydrogen chloride gas, sodium oxides	Hydrogen chloride gas	Carbon oxides, Nitrogen oxides (NOx)	Carbon oxides, sulfur oxides

Section 11: Toxicological Information

Isopropanol:

Acute toxicity: LD50 Oral – rat – 5,045 mg/kg -> Remarks: Behavioral: altered sleep time (including change in righting reflex). Behavioral: somnolence (general depressed activity).

LC50 Inhalation – rat – 8 h – 16,000 ppm

LD50 Dermal – rabbit – 12,800 mg/kg

Skin corrosion/irritation: Skin – rabbit- mild skin irritation.

Serious eye damage/eye irritation: Eyes – rabbit – eye irritation – 24 h

Respiratory or skin sensitization: May cause sensitization by skin contact.

Germ cell mutagenicity: no data available

Carcinogenicity: This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP or EPA classification.

IARC: 3 –Group 3: Not classifiable as to its carcinogenicity to humans (2-propanol)

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Teratogenicity: no data available

Specific target organ toxicity – single exposure (GHS): May cause drowsiness or dizziness.

Specific target organ toxicity – repeated exposure (GHS): no data available

Aspiration hazard: no data available

Potential Health Effects

Inhalation: May be harmful if inhaled. Causes respiratory tract irritation. Vapors may cause drowsiness or dizziness.

Skin: May be harmful if absorbed through skin. Causes skin burns.

Eyes: Causes severe eye burns.

Ingestion: May be harmful if swallowed.

Signs and Symptoms of Exposure: Central nervous system depression. Prolonged or repeated exposure can cause: nausea, headache, vomiting, narcosis, drowsiness. Overexposure may cause mild, reversible liver effects.

Additional information: RTECS: NT8050000

Chloramine T:

Acute toxicity: no data available

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory or skin sensitization: May cause allergic respiratory reaction

Germ cell mutagenicity: no data available

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Teratogenicity: no data available

Specific target organ toxicity – single exposure (GHS): no data available

Specific target organ toxicity – repeated exposure (GHS): no data available

Aspiration hazard: no data available

Potential Health Effects

Inhalation: May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract

Skin: May be harmful if absorbed through skin. Causes skin burns.

Eyes: Causes severe eye burns.

Ingestion: May be harmful if swallowed.

Signs and Symptoms of Exposure: Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer. Cough, shortness of breath, headache, nausea, vomiting. Repeated exposure may cause asthma.

Additional information: RTECS: not available

Perchloric acid:

Acute toxicity: no data available

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: no data available

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Teratogenicity: no data available

Specific target organ toxicity – single exposure (GHS): no data available

Specific target organ toxicity – repeated exposure (GHS): no data available

Potential Health Effects

Inhalation: May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract

Skin: May be harmful if absorbed through skin. Causes skin burns.

Eyes: Causes eye burns. Causes severe eye burns.

Ingestion: May be harmful if swallowed.

Signs and Symptoms of Exposure: Burning sensation, cough, wheezing, laryngitis, shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

Additional information: RTECS: not available

4-(Dimethylamino)benzaldehyde (DMAB):

Acute toxicity: LD50 Oral - Rat - female - > 2,000 mg/kg (OECD Test Guideline 423) Inhalation: No data available Dermal: No data available

Skin corrosion/irritation: Skin - reconstructed human epidermis (RhE) Result: No skin irritation - 42 min (OECD Test Guideline 439)

Serious eye damage/eye irritation: Eyes - In vitro study Result: non-corrosive - 4 h (OECD Test Guideline 437)

Respiratory or skin sensitization: Local lymph node assay (LLNA) – Mouse Result: positive (OECD Test Guideline 429)

Germ cell mutagenicity: No data available Ames test Escherichia coli/Salmonella typhimurium Result: negative

Carcinogenicity:

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity: no data available

Teratogenicity: no data available

Specific target organ toxicity – single exposure (GHS): no data available

Specific target organ toxicity – repeated exposure (GHS): no data available

Potential Health Effects

Inhalation: May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract

Skin: May be harmful if absorbed through skin. Causes skin burns.

Eyes: Causes eye burns. Causes severe eye burns.

Ingestion: May be harmful if swallowed.

Signs and Symptoms of Exposure: Burning sensation, cough, wheezing, laryngitis, shortness of breath, spasm, inflammation and edema of the larynx, spasm, inflammation and edema of the bronchi, pneumonitis, pulmonary edema. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin.

Additional information: RTECS: CU5775000

DMSO:

Acute toxicity: LD50 Oral - rat - 14,500 mg/kg

LC50 Inhalation - rat - 4 h - 40250 ppm

LD50 Dermal - rabbit - > 5,000 mg/kg

Skin corrosion/irritation: no data available

Serious eye damage/eye irritation: no data available

Respiratory or skin sensitization: no data available

Germ cell mutagenicity: Genotoxicity in vitro - mouse – lymphocyte Cytogenetic analysis

Genotoxicity in vitro - mouse – lymphocyte Mutation in mammalian somatic cells.

Genotoxicity in vivo - rat – Intraperitoneal Cytogenetic analysis

Genotoxicity in vivo - mouse – Intraperitoneal DNA damage

Carcinogenicity:

Carcinogenicity – rat – Oral Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Skin & Appendages: Other: Tumors.

Carcinogenicity – mouse – Oral Tumorigenic: Equivocal tumorigenic agent by RTECS criteria. Leukaemia Skin & Appendages: Other: Tumors.

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity:

Reproductive toxicity – rat – Intraperitoneal Effects on Fertility: Abortion.

Reproductive toxicity – rat – Intraperitoneal Effects on Fertility: Post-implantation mortality

(e.g., dead and/or resorbed implants per total number of implants).

Reproductive toxicity – rat – Subcutaneous Effects on Fertility: Post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants). Effects on Fertility: Litter size (e.g., # fetuses per litter; measured before birth).

Reproductive toxicity – mouse – Oral Effects on Fertility: Pre-implantation mortality (e.g., reduction in number of implants per female; total number of implants per corpora lutea). Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Specific Developmental Abnormalities: Musculoskeletal system.

Teratogenicity: : Developmental Toxicity – mouse – Intraperitoneal Effects on Embryo or Fetus: Fetotoxicity (except death, e.g., stunted fetus).

Specific Developmental Abnormalities: Musculoskeletal system.

Signs and Symptoms of Exposure: Exposure via ingestion may cause nausea, fatigue, headache.

Additional Information: RTECS: PV6210000

Section 12: Ecological Information

Isopropanol:

Persistence and degradability: no data available

Toxicity: Toxicity to fish: LC50 – Pimephales promelas (fathead minnow) – 9,640 mg/l – 96 h

Toxicity to daphnia and other aquatic invertebrates: EC50 – Daphnia magna (water flea) – 5,102 mg/l – 24 h

Immobilization EC50 – Daphnia magna (water flea) – 6,851 mg/l – 24 h

Toxicity to algae: EC50 – Desmodesmus subspicatus (green algae) – >2,000 mg/l – 72 h

EC50 – algae – >1,000 mg/l – 24 h

Bioaccumulative potential: no data available

Mobility in soil: no data available

PBT and vPvB assessment: no data available

Other adverse effects: no data available

Chloramine T:

Persistence and degradability: Biodegradability aerobic - Exposure time 28 d Result: 92 % - Readily biodegradable. (OECD Test Guideline 301D)

Remarks: (anhydrous substance)

Toxicity: Toxicity to fish static test LC50 - Oncorhynchus mykiss (rainbow trout) - 100 mg/l - 96 h (US-EPA)

Remarks: (anhydrous substance)

Toxicity to daphnia and other aquatic invertebrates EC50 - Daphnia magna (Water flea) - 4.5 mg/l - 48 h

Remarks: (IUCLID) NOEC - Daphnia magna (Water flea) - 1.1 mg/l - 21 d (OECD Test Guideline 202)

Toxicity to algae static test EC50 - Pseudokirchneriella subcapitata (green algae) – 13 mg/l - 96 h (OECD Test Guideline 201)

Remarks: (anhydrous substance)

Toxicity to bacteria static test EC50 - activated sludge - 37 mg/l - 3 h (OECD Test Guideline 209) Remarks: (anhydrous substance)

Bioaccumulative potential: Bioaccumulation Oncorhynchus mykiss (rainbow trout) - 1 h at 11.8 °C - 20 mg/l (Chloramine-T trihydrate)

Bioconcentration factor (BCF): 2.2

Mobility in soil: no data available

PBT and vPvB assessment: no data available

Other adverse effects: no data available

Perchloric acid:

Persistence and degradability: no data available

Toxicity: Toxicity to daphnia and other aquatic invertebrates Immobilization EC50 - Daphnia magna (Water flea) - > 100 mg/l - 48 h (OECD Test Guideline 202)

Bioaccumulative potential: no data available

Mobility in soil: no data available

PBT and vPvB assessment: no data available

Other adverse effects: Do not empty into drains. Neutralisation will not reduce ecotoxic effects.

4-(Dimethylamino)benzaldehyde (DMAB):

Persistence and degradability: Biodegradability aerobic - Exposure time 28 d Result: 0 % - Not readily biodegradable. (OECD Test Guideline 301F)

Toxicity: Toxicity to fish LC50 - Pimephales promelas (fathead minnow) - 45.7 mg/l - 96 h Remarks: (External MSDS)

Toxicity to daphnia and other aquatic invertebrates semi-static test EC50 - Daphnia magna (Water flea) - 1.58 mg/l – 48 h (OECD Test Guideline 202)

Toxicity to algae static test ErC50 - Desmodesmus subspicatus (green algae) - 72.7 mg/l - 72 h (OECD Test Guideline 201)

Bioaccumulative potential: no data available

Mobility in soil: no data available

PBT and vPvB assessment: no data available

Other adverse effects: Discharge into the environment must be avoided.

DMSO:

Persistence and degradability: no data available

Toxicity: Toxicity to fish: LC50 – Pimephales promelas (fathead minnow) – 34,000 mg/l – 96 h

LC50 – Oncorhynchus mykiss (rainbow trout) – 35,000 mg/l – 96 h

Toxicity to daphnia and other aquatic invertebrates: EC50 – Daphnia pulex (Water flea) – 27,500 mg/l

Toxicity to algae: EC50 – Lepomis macrochirus (Bluegill) – >400,000 mg/l – 96 h

Bioaccumulative potential: no data available

Mobility in soil: no data available

PBT and vPvB assessment: no data available

Other adverse effects: no data available

Section 13: Disposal Considerations

Product: Observe all federal, state, and local environmental regulations. Contact licensed professional waste disposal service to dispose of this material.

Contaminated packaging: Dispose of as unused product.

Section 14: Transport Information

Isopropanol:

DOT (US): UN-Number: 1219, Class: 3, Packing group: II; Proper shipping name: Isopropanol; Marine pollutant: No; Poison Inhalation Hazard: No

IMDG: UN-Number: 1219, Class: 3, Packing group: II; EMS-No: F-E, S-D; Proper shipping name: ISOPROPANOL; Marine pollutant: No

IATA: UN-Number: 1219, Class: 3, Packing group: II; Proper shipping name: Isopropanol

Chloramine T:

DOT (US): UN-Number: 3263, Class: 8, Packing group: III; Proper shipping name: Corrosive solid, basic, organic, n.o.s. (Chloramine T trihydrate)

Marine pollutant: No; Poison Inhalation Hazard: No

IMDG: UN-Number: 3263, Class: 8, Packing group: III; EMS-No: F-A, S-B; Proper shipping name: CORROSIVE SOLID, BASIC, ORGANIC, N.O.S.

(Chloramine T trihydrate); Marine pollutant: No

IATA: UN-Number: 3263, Class: 8, Packing group: III; Proper shipping name: Corrosive solid, basic, organic, n.o.s. (Chloramine T trihydrate)

Perchloric acid:

DOT (US): UN-Number: 1873, Class: 5.1 (8), Packing group: I; Proper shipping name: Perchloric acid; Marine pollutant: No; Poison Inhalation Hazard: No

IMDG: UN-Number: 1873, Class: 5.1 (8), Packing group: I; EMS-No: F-G, S-Q; Proper shipping name: PERCHLORIC ACID; Marine pollutant: No

IATA: UN-Number: 1873, 5.1 (8), Packing group: I; Proper shipping name: Perchloric acid; IATA Passenger: not permitted for transport

4-(Dimethylamino)benzaldehyde (DMAB):

DOT (US): Not dangerous goods

IMDG: Not dangerous goods

IATA: Not dangerous goods

DMSO:

DOT (US): UN-Number: 1993, Class: CBL, Packing group: III; Proper shipping name: Combustible liquid, n.o.s. (Dimethyl sulfoxide); Marine pollutant

No; Poison Inhalation Hazard: No

IMDG: Not dangerous goods.

IATA: Not dangerous goods.

Section 15: Regulatory Information

1. **Regulation under the Occupational Safety and Health Act**
 - 1.1 Harmful Substances Required Permission for Manufacture - Not relevant
 - 1.2 Harmful Substances Prohibited from Manufacturing - Not relevant
 - 1.3 Carcinogenic Substances - Not relevant
 - 1.4 Controlled Substances Subject to Environment Monitoring - Not relevant
 - 1.5 Controlled Substances Subject to Health Examination - Not relevant
 - 1.6 Hazardous substances requiring management - Not relevant
2. **Act on the Registration and Evaluation, etc. of Chemical Substances, Chemicals Control Act**
 - 2.1 Toxic Chemicals - Not relevant
 - 2.2 Observational chemicals - Not relevant
 - 2.3 Restricted Chemicals - Not relevant
 - 2.4 Prohibited Chemicals - Not relevant
 - 2.5 Accident Precaution Chemicals - Not relevant
3. **Dangerous Substances Safety Management Act**
 - 3.1 Not relevant
4. **Wastes Control Act**
 - 4.1 Follow article 13 of the act to dispose the product waste
5. **Other regulations**

KECI Number

Not in compliance with the inventory

Section 16: Other information

OTHER INFORMATION:

PREPARATION INFORMATION:

DISCLAIMER:

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions.

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