



MATERIAL SAFETY DATA SHEET


SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

| | | | |
|--|---|---|---|
| Product Identifier: ProteaseTag® Active Neutrophil Elastase Immunoassay Product PA001 | | WHMIS Classification: Not applicable | |
| Product Use: Laboratory use; For Research Use Only; Not for use in Diagnostic Procedures | | | |
| Components: Microplate, NE-Tag (contains dimethylformamide), Standard (contains acidic buffer), Conjugate (contains stabilizing solution), Wash Buffer A Concentrate (contains Proclin® 950), Wash Buffer B Concentrate (contains Proclin® 950), Standard Diluent (contains Proclin® 950), Reagent Diluent (contains Proclin® 950), Substrate (contains Tetramethylbenzidine) and Stop Solution (contains sulfuric acid). | | | |
| Manufacturer's Name: ProAxis Ltd | | Supplier's Name: ProAxis Ltd | |
| Street Address: Unit 1B Concourse III | | Street Address: Unit 1B Concourse III | |
| City: Belfast | County: Antrim | City: Belfast | County: Antrim |
| Postal Code: BT3 9DT | Emergency Telephone: +44 (28) 90730444 | Postal Code: BT7 1NF | Emergency Telephone: +44 (28) 90730444 |
| Date MSDS Prepared: 01-Sept-2016 | Version Number: 1.0 | MSDS Prepared By: KLM, ProAxis Ltd | Phone Number: +44 (0)28 90730442 |

SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

| Hazardous Ingredients (<i>specific</i>) | % | CAS Number | LD ₅₀ of Ingredient (<i>specify species and route</i>) | LC ₅₀ of Ingredient (<i>specify species</i>) |
|--|--|----------------------------|--|---|
| NE-Tag contains: N, N-Dimethylformamide | >99 | 68-12-2 | Oral- rat – 2,800 mg/kg Dermal – rabbit – 1,500 mg/kg | Inhalation – rat – 4 hr 9-15 mg/l |
| Stop solution contains: Sulphuric acid Water | ~10 ~90 | 7664-93-9 7732-18-5 | Oral- rat – 2,140 mg/kg Oral – rat - >90 ml/kg | Inhalation – rat – 2 hr 510 mg/m ³ Not available |
| Immunoassay buffers contain: Proclin [®] 950 Proprietary Buffer | 1.25- 0.05% 98.75- 99.95% | 2682-20-4 NA | Not available Not available | Not available Not available |
| Chromogen Substrate contains: 3,3',5,5'- Tetramethylbenzidine Water | <1 | 54827-17-7 7732-18-5 | Not available Oral – rat - >90 ml/kg | Not available Not available |
| Acidic Buffer contains: Hydrochloric Acid Concentrate Proprietary Buffer | ~2 ~98 | 7647-01-0 NA | Not available Not available | Not available Not available |



SECTION 3 — HAZARDS IDENTIFICATION

| | |
|---|--|
| Dimethylformamide | |
| Route of Entry Inhalation and ingestion. Eye contact. Skin contact. Skin absorption. | |
| Emergency Overview Harmful by ingestion, inhalation or skin absorption. Irritant. Target organs: liver, kidneys, eyes, skin, cardiovascular system, bone marrow, respiratory system. 500 ppm (DIMETHYLFORMAMIDE) is immediately dangerous to life or health. | |
| WHMIS Symbols  | Potential Health Effects: Hazard Statement(s): H312 + H332 - Harmful in contact with skin or if inhaled H319; Eye Irritant - Causes serious eye irritation H360; May damage fertility or the unborn child. |

SECTION 4 — FIRST AID MEASURES

| Dimethylformamide | |
|--------------------------|---|
| General | Symptoms of poisoning may not even occur after several hours; medical observation should occur for at least 48 hours after the accident. |
| Skin Contact | Immediately wash off with soap and plenty of water for at least 15 minutes. Remove contaminated clothing and/or footwear. Seek medical advice. |
| Eye Contact | Rinse thoroughly with plenty of water for at least 15 minutes holding eyelids apart and seek immediate medical attention. |
| Inhalation | If breathed in, move person into fresh air. Administer approved oxygen supply if breathing is difficult. If not breathing, give artificial respiration. Consult a physician. |
| Ingestion | Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician. Place victim in a stable side position and keep warm. |

SECTION 5 — FIRE FIGHTING MEASURES

| Dimethylformamide | |
|---|--|
| Flammable:  Flam. Liquids Category 3 H226 Flammable liquid and vapour. | Means of Extinction : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. |
| Flashpoint (° C) and Method: 58 °C (136 °F) closed cup | Flammable Limit (% by volume): LOWER: 2.2% UPPER: 16% |
| Hazardous Combustion Products: No data available | NFPA: Health = 2 Fire = 2 Reactivity = 0  |


SECTION 6 — ACCIDENTAL RELEASE MEASURES

| Dimethylformamide |
|---|
| Leak and Spill Procedures: |
| Personal precautions, protective equipment and emergency procedures Evacuate the area and remove all sources of ignition. Use personal protective equipment. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas. |
| Environmental precautions Prevent further leakage or spillage if safe to do so. Do not empty product into drains. |
| Methods and materials for containment and cleaning up Contain spillage using sand or vermiculite for absorption. Collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations. Ventilate area and wash spill site after material pick up is complete. |

SECTION 7 — HANDLING AND STORAGE

| Dimethylformamide |
|--|
| Handling Procedures and Equipment |
| Ensure good ventilation |
| Open and handle with care |
| Avoid exposure |
| Avoid contact with skin and eyes. |
| Avoid inhalation of vapour or mist. |
| Keep away from sources of ignition and protect from heat - No smoking. |
| Protect against the build up of electrostatic charge. |
| Storage Requirements |
| Store container tightly closed in a dry and well-ventilated place. |

SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

| Dimethylformamide | |
|--|--|
| Exposure Limits: PEL 30 mg/m ³ , 10 ppm Skin REL 30 mg/m ³ , 10 ppm Skin TLV 30 mg/m ³ , 10 ppm Skin; BEI | Specific Engineering Controls: Handle in accordance with good industrial hygiene and safety practice. Wash hands before any breaks and at the end of the work day. |
| Personal Protective Equipment : | |
|  | |
| Use safety goggles, gloves and lab coats sufficient to protect skin. Make eye bath and emergency shower available. Ensure that eyewash station and safety shower is proximal to the work-station location. | |

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

| Dimethylformamide | | |
|--|--|---|
| Physical State: Liquid | Odour and Appearance: Amine-like, clear | Molecular Weight: Not determined |
| Specific Gravity: Not available | Vapour Density (air = 1): 2.52 – (Air = 1) | Vapour Pressure (mmHg):: 3.60 hPa at 20 °C 5.16 hPa at 25 °C |
| Evaporation Rate: Not determined | Boiling Point (° C): 153 °C | Freezing Point (° C): -61 °C |
| pH: 6.7 | Partition Coefficient of n-octanol/Water: log Pow: -1.01 | Solubility in Water: Fully miscible |

SECTION 10 — STABILITY AND REACTIVITY

| Dimethylformamide | | |
|--|--|---|
| Chemical Stability: Stable under recommended storage conditions. | If no, under which conditions? | |
| Incompatibility with Other Substances: Strong oxidising agents | Reactivity, and under what conditions? No data available | Hazardous Decomposition Products: No dangerous decomposition products known |

SECTION 11 — TOXICOLOGICAL INFORMATION

| Dimethylformamide | |
|---|---|
| <p>Effects of Acute Exposure:</p> <p>LD50 Oral - rat - 2,800 mg/kg LC50 Inhalation - rat - 4 h - 9 - 15 mg/l LD50 Dermal - rabbit - 1,500 mg/kg</p> | <p>Reproductive toxicity:</p> <p>May cause congenital malformation in the foetus.</p> |
| <p>Skin sensitization:</p> <p>Skin - Human Result: Mild skin irritation - 24 h Eyes - rabbit Result: Moderate eye irritation</p> | <p>Respiratory sensitization:</p> <p>No data available</p> |
| <p>Carcinogenicity-IARC:</p> <p>IARC: 3 - Group 3: Not classifiable as to its carcinogenicity to humans (N,N-Dimethylformamide)</p> | <p>Carcinogenicity – ACGIH?</p> <p>This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.</p> |


SECTION 12 — ECOLOGICAL INFORMATION

| Dimethylformamide |
|--|
| <p>Aquatic Toxicity:</p> <p>No relevant information available.</p> |

SECTION 13 — DISPOSAL CONSIDERATIONS

| Dimethylformamide |
|---|
| <p>Waste Disposal:</p> <p>Product – burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Avoid run off. May be harmful to aquatic life. Can be dangerous if allowed to enter drinking water intakes.</p> |

SECTION 14 — TRANSPORT INFORMATION

| Dimethylformamide | |
|---|---|
| Special Shipping Information: | |
|  | DOT - 3 Flammable liquids. N,N-DIMETHYLFORMAMIDE, solution ADR UN2265 |


SECTION 15 — REGULATORY INFORMATION

| Dimethylformamide | | |
|---|---------------------------------|-----------------------------|
| WHMIS Classification B-3 D-2A | OSHA Substance is not listed | TSCA Substance is listed |
| <i>This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by CPR.</i> | | |

SECTION 16 — OTHER INFORMATION

| Dimethylformamide |
|---|
| <ul style="list-style-type: none"> • Flammable liquid • Harmful liquid • Carcinogen • Irritant • Do not breathe vapour • Avoid all contact with the product • Avoid prolonged or repeated exposure • Use in a chemical fume hood • Keep away from heat, sparks and flame • Use non-sparking tools • Bond and ground transfer containers and equipment to avoid static accumulation • Handle and open container with care • Container should be opened only by a technically qualified person • Causes intolerance of alcoholic beverages (reddening of face and neck). <p>(N,N-Dimethylformamide)</p> |

SECTION 3 — HAZARDS IDENTIFICATION

| | |
|--|--|
| Sulphuric Acid | |
| Route of Entry Inhalation and ingestion. Eye contact. Skin contact. | |
| Emergency Overview Corrosive and an irritant in the case of skin contact, eye contact, ingestion and inhalation. Toxic to lungs and mucous membranes. Repeated or prolonged exposure can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated or prolonged inhalation of vapours may lead to chronic respiratory irritation. | |
| WHMIS Symbols  | Potential Health Effects: Hazard Statement(s): H290; May be corrosive to metals H314; Causes severe skin burns and eye damage. R36; R38 Irritating to eye and skin |

SECTION 4 — FIRST AID MEASURES

| | |
|--|--|
| Sulphuric Acid | |
| General Consult a physician. | |
| Skin Contact Immediately wash off with plenty of soap and water. Remove contaminated clothing and/or footwear. Consult a physician. | |
| Eye Contact Rinse thoroughly with plenty of water for at least 15 minutes and seek immediate medical attention. | |
| Inhalation If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. | |
| Ingestion Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Immediately consult a physician. | |

SECTION 5 — FIRE FIGHTING MEASURES

| | |
|-----------------------------|--|
| Sulphuric Acid | |
| Flammable: Not flammable | Means of Extinction : Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. In case of fire, toxic and corrosive gases may be formed. Fire-fighters – wear self-contained breathing apparatus for firefighting if necessary. |

| | |
|---|---|
| Flashpoint (° C) and Method: Not applicable | Flammable Limit (% by volume): No data available |
| Hazardous Combustion Products: No data available | NFPA: Health = 3 Fire = 0 Reactivity = 2 Special = W reacts violently/explosively with water |



SECTION 6 — ACCIDENTAL RELEASE MEASURES


| |
|---|
| <p>Sulphuric Acid</p> <p>Leak and Spill Procedures:</p> <p>Personal precautions, protective equipment and emergency procedures Use appropriate personal protective equipment to prevent contamination of the skin, eyes and personal clothing. Avoid breathing vapours, mist or gas. Ensure adequate ventilation.</p> <p>Environmental precautions Do not empty product into drains.</p> <p>Methods and materials for containment and cleaning up Contain spillage using an inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.</p> |
|---|

SECTION 7 — HANDLING AND STORAGE

| |
|---|
| <p>Sulphuric Acid</p> <p>Handling Procedures and Equipment Avoid inhalation of vapour or mist.</p> <p>Storage Requirements</p> |
|---|

Store in a cool, dry place. Keep container upright and tightly closed.

SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

| Sulphuric Acid | |
|---|---|
| Exposure Limits: Contains no substances with occupational exposure limit values. | Specific Engineering Controls: Use with adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Wash hands before any breaks and at the end of the work day. |
| Personal Protective Equipment : | |
|  | |
| Use approved safety goggles, gloves and lab coats sufficient to protect skin. Make eye bath and emergency shower available. Ensure that eyewash station and safety shower is proximal to the work-station location. | |

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

| Sulphuric Acid | | |
|---|---|--|
| Physical State: Liquid | Odour and Appearance: Pungent, clear | Molecular Weight: Not determined |
| Specific Gravity: Not available | Vapour Density (air = 1): Not available | Vapour Pressure (mmHg):: Not available |
| Evaporation Rate: Not available | Boiling Point (° C): Not available | Freezing Point (° C): Not available |
| pH: ~1 | Partition Coefficient of n-octanol/Water: Not available | Solubility in Water: Soluble |

SECTION 10 — STABILITY AND REACTIVITY

| Sulphuric Acid | |
|--|---|
| Chemical Stability: Stable under recommended storage conditions. | Conditions to avoid: Bases, Halides, Metals, Alkalis, Acetonitrile. |

| | | |
|---|--|--|
| <p>Incompatibility with Other Substances:</p> <p>Most metals, oxidisers, reducers, bases, metal carbonates, cyanides, sulphides, carbides, oxides, metal acetylides, hydrides, halogens, organic or combustible materials, perchlorates, acetonitrile, permanganates, alcohols, picrates.</p> | <p>Reactivity, and under what conditions?</p> <p>Contact with metals produces highly flammable hydrogen gas. Addition of water liberates excessive heat.</p> | <p>Hazardous Decomposition Products:</p> <p>Products formed under fire conditions: Oxides of Sulphur, Hydrogen gas</p> |
|---|--|--|

SECTION 11 — TOXICOLOGICAL INFORMATION

| | |
|--|---|
| <p>Sulphuric Acid</p> | |
| <p>Effects of Acute Exposure: LD50 Oral - rat - 2,140 mg/kg LC50 Inhalation - rat - 2 h - 510 mg/m³</p> | <p>Reproductive toxicity: No data available.</p> |
| <p>Skin sensitization: Skin - Rabbit Result: Extremely corrosive and destructive to tissue Eyes – Rabbit Result: Corrosive to eyes</p> | <p>Respiratory sensitization: No data available</p> |
| <p>Carcinogenicity-IARC: IARC: 3 - Group 1: Occupational exposure to strong-inorganic-acid-mists containing sulphuric acid is carcinogenic. No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed carcinogen by IARC.)</p> | |

SECTION 12 — ECOLOGICAL INFORMATION

| | |
|--|--|
| <p>Sulphuric Acid</p> | |
| <p>Aquatic Toxicity: This product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.</p> | |

SECTION 13 - DISPOSAL CONSIDERATIONS

Sulphuric Acid

Waste Disposal:

Product – offer surplus and non-recyclable solutions to a licensed disposal company.

SECTION 14 — TRANSPORT INFORMATION

Dimethylformamide

Special Shipping Information:



DOT - 3 Flammable liquids.
N,N-DIMETHYLFORMAMIDE, solution
ADR UN2265

Sulphuric Acid

Special Shipping Information



DOT - 8 Corrosive.
ADR UN2796, Sulphuric Acid

SECTION 15 — REGULATORY INFORMATION

Sulphuric Acid

| | |
|---------------------------------------|----------------|
| [WHMIS Classification] D-1A, E | [OSHA] 2310 |
| [TSCA] Substance is listed | |

SECTION 16 — OTHER INFORMATION

Sulphuric Acid

- Risk Phrases: R36/38 Irritating to eyes and skin
- Safety Phrases: S26 In case of contact with eyes rinse immediately with plenty of water and seek medical advice
- H-Statements –
 - H290 May be corrosive to metals
 - H314 Causes severe skin burns and eye damage
 - Met. Corr

SECTION 3 — HAZARDS IDENTIFICATION

Proclin® 950

[Route of Entry]

Inhalation and ingestion. Skin contact.

[Emergency Overview]

Is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes and skin. Can lead to spasm, inflammation and edema of the larynx and bronchi. Classified for acute toxicity, skin corrosion and sensitisation. Avoid breathing vapours and avoid release into the environment.

[WHMIS Symbols]



[Potential Health Effects]



Hazard Statement(s):

H314; Causes severe skin burns and eye damage

H317; May cause an allergic reaction

H331; Toxic if inhaled

H400; Very toxic to aquatic life

R20; Harmful by inhalation

R36/38; Irritating to eyes and skin


R43; May cause sensitisation by skin contact

R50; Very toxic to aquatic organisms

SECTION 4 — FIRST AID MEASURES

| | |
|---------------------|---|
| Proclin® 950 | |
| General | Consult a physician. |
| Skin Contact | Immediately wash off with plenty of soap and water. Remove contaminated clothing and/or footwear. Take victim immediately to hospital. Consult a physician. |
| Eye Contact | Rinse thoroughly with plenty of water for at least 15 minutes and seek immediate medical attention. |
| Inhalation | If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. |
| Ingestion | Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Immediately consult a physician. |

SECTION 5 — FIRE FIGHTING MEASURES

| | |
|--|--|
| Proclin® 950 | |
| Flammable | Not flammable |
| Means of Extinction Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Fire-fighters – wear self-contained breathing apparatus for firefighting if necessary. | |
| Flashpoint (° C) and Method | Flammable Limit (% by volume) |
| no data available | no data available |
| Hazardous Combustion Products Carbon oxides, nitrogen oxides, sulphur oxides | |
| [NFPA] |  |
| Health = 3 | |
| Fire = 0 | |
| Reactivity = 2 | |
| Special = W reacts violently/explosively with water | |

SECTION 6 — ACCIDENTAL RELEASE MEASURES

| |
|---|
| Proclin® 950 |
| Leak and Spill Procedures |
| Personal precautions, protective equipment and emergency procedures Use appropriate personal protective equipment. Avoid contact with the skin and eyes. Do not breathe vapours or spray mist. Ensure adequate ventilation. |
| Environmental precautions |

Do not empty product into drains. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up

Contain spillage using an inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

SECTION 7 — HANDLING AND STORAGE

Proclin® 950

Handling Procedures and Equipment

Avoid contact with skin and eyes. Do not breathe vapours or spray mist. Ensure adequate ventilation and wear personal protective equipment.

Storage Requirements

Keep out of the reach of children. Store in a cool, dry, well-ventilated place. Keep container upright and tightly closed.

SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

Proclin® 950

Exposure Limits:

Contains no substances with occupational exposure limit values.

Specific Engineering Controls

Avoid contact with skin, eyes and clothing. Use with adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Wash hands before any breaks and at the end of the work day.

Personal Protective Equipment



Use approved safety goggles, gloves and lab coats sufficient to protect skin and eyes.

Make eye bath and emergency shower available. Ensure that eyewash station and safety shower is proximal to the work-station location.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Proclin® 950

| | | |
|-----------------------------------|---|---|
| Physical State Liquid | Odour and Appearance Mild | Molecular Weight Not determined |
| Specific Gravity Not available | Vapour Density (air = 1) Not available | Vapour Pressure (mmHg) 22.66 hPa at 20°C |

| | | |
|-----------------------------------|---|----------------------------------|
| Evaporation Rate Not available | Boiling Point (° C) 100 °C | Freezing Point (° C) -20 °C |
| pH 3.0 - 6.0 | Partition Coefficient of n-octanol/Water Not available | [Solubility in Water] Soluble |

SECTION 10 — STABILITY AND REACTIVITY

| | |
|---|--------------------------------|
| Proclin® 950 | |
| Chemical Stability Stable under recommended storage conditions. | If no, under which conditions? |
| Incompatibility with Other Substances Strong oxidizing agents, Amines, Mercaptans, Reducing Agents | |
| Reactivity, and under what conditions? No data available | |
| Conditions to avoid No data available | |
| Hazardous decomposition products No data available | |

SECTION 11 — TOXICOLOGICAL INFORMATION

| | |
|---|--|
| Proclin® 950 | |
| Effects of Acute Exposure No data available | |
| Skin corrosion/irritation No data available | Respiratory sensitization No data available |
| Carcinogenicity-IARC 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. | |
| Reproductive toxicity No data available. | |

SECTION 12 — ECOLOGICAL INFORMATION


| |
|---|
| [Aquatic Toxicity] Very toxic to aquatic life. |
|---|

SECTION 13 - DISPOSAL CONSIDERATIONS

| |
|----------------|
| Waste Disposal |
|----------------|

Product – offer surplus and non-recyclable solutions to a licensed disposal company.

SECTION 14 — TRANSPORT INFORMATION

| | |
|--|---|
| Proclin® 950 | |
| Special Shipping Information | |
|  | DOT - 8 Corrosive. ADR 3265 (2-Methyl-2H-isothiazol-3-one) |

SECTION 15 — REGULATORY INFORMATION

| | |
|-----------------------|-------------------|
| Proclin® 950 | |
| [HMIS Classification] | [OSHA] |
| No data available | No data available |
| [TSCA] | |
| No data available | |

SECTION 16 — OTHER INFORMATION

| |
|---|
| Proclin® 950 |
| Acute toxicity. Acute aquatic toxicity Skin corrosion Skin sensitisation Specific target organ toxicity – single exposure Dangerous to the environment |
| <ul style="list-style-type: none">• H-Statements –<ul style="list-style-type: none">○ H302 Harmful if swallowed○ H314 Causes severe skin burns and eye damage○ H317 May cause an allergic skin reaction○ H331 Toxic if inhaled○ H335 May cause respiratory irritation |

- H400 Very toxic to aquatic life

SECTION 3 — HAZARDS IDENTIFICATION

| |
|--|
| TMB Solution |
| [Route of Entry] Ingestion. |
| [Emergency Overview] Show this Safety Data Sheet to a physician who should treat the patient symptomatically. |
| [WHMIS Symbols] Not considered hazardous. |
| [Potential Health Effects] Health risk is low. |

SECTION 4 — FIRST AID MEASURES

| |
|--|
| TMB Solution |
| General Consult a physician. |
| Skin Contact Immediately wash off with plenty of soap and water. Remove contaminated clothing and/or footwear. |
| Eye Contact Rinse immediately with plenty of water. After initial flushing, remove contact lenses and continue flushing for at least 15 minutes. If irritation persists, seek medical advice. |
| Inhalation If breathed in, move person into fresh air. If person feels queasy/discomfort, seek medical advice. |
| Ingestion Rinse mouth with water. Drink plenty of water. If person feels queasy/discomfort, seek medical advice. |

SECTION 5 — FIRE FIGHTING MEASURES

| | |
|---|---|
| TMB Solution | |
| Flammable Not flammable | |
| Means of Extinction | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. |
| Flashpoint (° C) and Method not applicable | Flammable Limit (% by volume) no data available |
| Hazardous Combustion Products | When heated to dryness the product may form hazardous decomposition products. |

[NFPA]

Non-hazardous

SECTION 6 — ACCIDENTAL RELEASE MEASURES

TMB Solution

Leak and Spill Procedures

Personal precautions, protective equipment and emergency procedures

Use appropriate personal protective equipment to prevent contamination of the skin, eyes and personal clothing.

Ensure adequate ventilation.

Environmental precautions

Do not empty product into drains. If a large amount of the product contaminates sewages, inform appropriate authorities in accordance with local regulations.

Methods and materials for containment and cleaning up

Absorb spillage using an inert absorbent material and dispose of in a plastic container.

SECTION 7 — HANDLING AND STORAGE

TMB Solution

Handling Procedures and Equipment

Ensure adequate ventilation.

Storage Requirements

Store at 4°C. Keep container upright and tightly closed. Protect against light.

SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

TMB Solution

Exposure Limits:

Contains no substances with occupational exposure limit values.

Specific Engineering Controls

Avoid contact with skin and eyes. Use with adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Wash hands before any breaks and at the end of the work day.

Personal Protective Equipment



Use approved safety goggles, gloves and lab coats sufficient to protect skin and eyes.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

TMB Solution

| | | |
|--|--|--|
| Physical State Liquid | Odour and Appearance Odourless, clear | Molecular Weight Not determined |
| Specific Gravity Not available | Vapour Density (air = 1) Not available | Vapour Pressure (mmHg) Not available |
| Evaporation Rate Not available | Boiling Point (° C) ~ 100°C | Freezing Point (° C) Not available |
| pH Not available | Partition Coefficient of n-octanol/Water Not available | [Solubility in Water] Miscible |

SECTION 10 — STABILITY AND REACTIVITY

| | |
|--|--------------------------------|
| TMB Solution | |
| Chemical Stability Stable under recommended storage conditions. | If no, under which conditions? |
| Incompatibility with Other Substances No information available | |
| Reactivity, and under what conditions? No information available | |
| Conditions to avoid Heat, flame, sparks | |
| Hazardous decomposition products When heated to dryness the product may form hazardous decomposition products. | |

SECTION 11 — TOXICOLOGICAL INFORMATION

| | |
|---|---|
| TMB Solution | |
| Effects of Acute Exposure No information available | |
| Skin corrosion/irritation Skin – May cause irritation Eyes – May cause irritation | Respiratory sensitization No data available |
| Carcinogenicity-IARC No data available | |
| Reproductive toxicity No data available. | |

SECTION 12 — ECOLOGICAL INFORMATION

| |
|---|
| [Aquatic Toxicity] Toxic to aquatic organisms and may cause long-term adverse effects in the aquatic environment. |
|---|

SECTION 13 - DISPOSAL CONSIDERATIONS

| |
|----------------|
| Waste Disposal |
|----------------|

Product – disposal should be according to local, state, national legislation. Dispose of through authority facilities or pass to chemical disposal company.

SECTION 14 — TRANSPORT INFORMATION

TMB Solution

Special Shipping Information

Not dangerous goods

SECTION 15 — REGULATORY INFORMATION

TMB Solution

[WHMIS Classification]

D-1A, E

[OSHA]

2310

[TSCA]

Substance is listed

SECTION 16 — OTHER INFORMATION

TMB Solution

SECTION 3 — HAZARDS IDENTIFICATION

Hydrochloric Acid Concentrate

[Route of Entry]

Inhalation and ingestion. Eye contact. Skin contact.

[Emergency Overview]

May be an irritant in the case of skin or eye contact. May cause respiratory irritation. May be corrosive to metals.

[WHMIS Symbols]



[Potential Health Effects]


Hazard Statement(s):

H290; May be corrosive to metals

SECTION 4 — FIRST AID MEASURES

| Hydrochloric Acid Concentrate | |
|--------------------------------------|---|
| General | Consult a physician. Show this safety sheet to the doctor in attendance. |
| Skin Contact | Remove contaminated clothing and/or footwear immediately. Wash off with plenty of soap and water.. Consult a physician. |
| Eye Contact | Rinse thoroughly with plenty of water for at least 15 minutes and seek immediate medical attention. |
| Inhalation | If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician. |
| Ingestion | Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Immediately consult a physician. |

SECTION 5 — FIRE FIGHTING MEASURES

| Hydrochloric Acid Concentrate | |
|---|--|
| Flammable | No data available |
| Means of Extinction | Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide. Fire-fighters – wear self-contained breathing apparatus for firefighting if necessary. |
| Flashpoint (° C) and Method | Flammable Limit (% by volume) |
| No data available | No data available |
| Hazardous Combustion Products | No data available |
| [NFPA] | |
| Health = 3 Fire = 0 Reactivity = Special |  |


SECTION 6 — ACCIDENTAL RELEASE MEASURES

| Hydrochloric Acid Concentrate | |
|--------------------------------------|--|
| Leak and Spill Procedures | <p>Personal precautions, protective equipment and emergency procedures Use appropriate personal protective equipment to prevent contamination of the skin, eyes and personal clothing. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.</p> <p>Environmental precautions Do not empty product into drains.</p> <p>Methods and materials for containment and cleaning up Contain spillage using an inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.</p> |

SECTION 7 — HANDLING AND STORAGE

| | |
|--------------------------------------|--|
| Hydrochloric Acid Concentrate | |
| Handling Procedures and Equipment | Avoid inhalation of vapour or mist. |
| Storage Requirements | Store in a cool, dry place. Keep container upright and tightly closed. |

SECTION 8 — EXPOSURE CONTROL / PERSONAL PROTECTION

| | |
|--|---|
| Hydrochloric Acid Concentrate | |
| Exposure Limits: <i>TWA 8 mg/m³, 5 ppm</i> <i>STEL 15 mg/m³, 10 ppm</i> | |
| EC Directive indicative occupational exposure limit values. | |
| Specific Engineering Controls | Handle in accordance with good industrial hygiene and safety practice. Wash hands before any breaks and at the end of the work day. |
| Personal Protective Equipment |  |
| Use approved safety goggles, gloves and lab coats sufficient to protect skin. Make eye bath and emergency shower available. Ensure that eyewash station and safety shower is proximal to the work-station location. | |

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

| | | |
|--------------------------------------|---|--|
| Hydrochloric Acid Concentrate | | |
| Physical State Liquid | Odour and Appearance Odourless, colourless | Molecular Weight Not determined |
| Specific Gravity Not available | Vapour Density (air = 1) Not available | Vapour Pressure 23 hPa |
| Evaporation Rate Not available | Boiling Point (° C) Not available | Freezing Point (° C) Not available |
| pH <1 | Partition Coefficient of n-octanol/Water Not available | [Solubility in Water] Completely miscible |

SECTION 10 — STABILITY AND REACTIVITY

| Hydrochloric Acid Concentrate | |
|--|--------------------------------|
| Chemical Stability Stable under recommended storage conditions. | If no, under which conditions? |
| Incompatibility with Other Substances Metals | |
| Reactivity, and under what conditions? No data available | |
| Conditions to avoid Heat, flames and sparks | |
| Hazardous decomposition products No data available | |

SECTION 11 — TOXICOLOGICAL INFORMATION

| Hydrochloric Acid Concentrate | |
|---|--|
| Effects of Acute Exposure LD50 Oral - rat - 700 mg/kg LD50 Dermal – rabbit – 5010 mg/kg LC50 Inhalation - rat - 1 h – 3124 ppm | |
| Skin corrosion/irritation No data available | Respiratory sensitization No data available |
| Carcinogenicity-IARC Contains one or more substances which are classified by IARC as carcinogenic to humans (Group 1), probably carcinogenic to humans (Group 2A) or possibly carcinogenic to humans (Group 2B). | |
| Reproductive toxicity No data available. | |

SECTION 12 — ECOLOGICAL INFORMATION

| |
|---|
| [Aquatic Toxicity] No data available |
|---|

SECTION 13 - DISPOSAL CONSIDERATIONS

| |
|--|
| Waste Disposal Product – offer surplus and non-recyclable solutions to a licensed disposal company. |
|--|

SECTION 14 — TRANSPORT INFORMATION

| |
|--------------------------------------|
| Hydrochloric Acid Concentrate |
|--------------------------------------|

Special Shipping Information



DOT - 8 Corrosive.
ADR UN1789 HYDROCHLORIC ACID

SECTION 15 — REGULATORY INFORMATION

| Hydrochloric Acid Concentrate | |
|--|--------|
| [WHMIS Classification] D-1A, E | [OSHA] |
| [TSCA] All ingredients are listed | |

SECTION 16 — OTHER INFORMATION

| Hydrochloric Acid Concentrate |
|---|
| <ul style="list-style-type: none">• Risk Phrases: R36/38 Irritating to eyes and skin• Safety Phrases: S26 In case of contact with eyes rinse immediately with plenty of water and seek medical advice• H-Statements –<ul style="list-style-type: none">○ H290 May be corrosive to metals○ H314 Causes severe skin burns and eye damage○ H335 May cause respiratory irritation○ Met. Corr○ Skin. Corr○ Specific target organ toxicity – single exposure |

Disclaimer:

The information contained in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is provided to be used as a guidance for safe handling, use, processing, storage, transportation, disposal and release. It is not a

guarantee of the properties or quality of the product. The information relates only to the specific material designated and is not valid for such material in combination with any other materials or in any other process. ProAxis Limited and its affiliates shall not be held liable for any damage resulting from handling to contact with the product.

Date: 4-Sept-2015