

Section 1: Product and Company Identification

Product Name: Verikine™ Interferon ELISA kits (containing Kathon preservative)

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Manufacturer: PBL Biomedical Laboratories
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This MSDS is applicable to the following products:

Product Number	Product Name
41100	VeriKine™ Human Interferon Alpha ELISA Kit
41105	VeriKine™ Human Interferon Alpha Multi-subtype ELISA Kit
41110	VeriKine™ Human Interferon Alpha Multi-subtype Serum ELISA Kit
41410	VeriKine™ Human Interferon Beta ELISA Kit
41415	VeriKine-HS™ Human Interferon Beta Serum ELISA Kit
42120	VeriKine™ Mouse Interferon Alpha ELISA Kit
42400	VeriKine™ Mouse Interferon Beta ELISA Kit
42410	VeriKine-HS™ Mouse Interferon Beta Serum ELISA Kit
46100	VeriKine™ Cynomolgus/Rhesus Interferon Alpha Serum ELISA Kit

Note: To the best of our knowledge, at the supplied concentrations stated below, the products do not pose a hazard equivalent to the hazard posed by the individual ingredients in their pure form and have thereby classified each in its entirety as non-hazardous.

In compliance with CFR 29 1910.1200(g) 2(i) (C) (3), all ingredients that may present minor physical hazards while in the mixture have been listed.

It is recommended to the user to follow Sections 4 to 7 in event of an emergency and for proper handling and storage instructions. The user should refer to Section 8 with regard to appropriate protective equipment.

Section 2: Composition / Information on Ingredients

Only those materials which may be hazardous at the supplied concentrations or may cause allergic reactions have been listed as composition:

Component	Composition
Coated Plates	<0.1 % Kathon CG/ICP, < 10% Animal Protein products +
Wash Concentrate	0.1 % v/v Kathon CG/ICP
IFN standard	< 1 % w/v Animal Protein products
Dilution Buffer / Sample Diluent / Sample Buffer / Serum Buffer***	< 1 % w/v Animal Protein products; <2.5% v/v Animal Protein products ⁺⁺ ; 0.1 % v/v Kathon CG/ICP, < 0.003% Sodium Azide ⁺⁺⁺
Antibody Concentrate	None
HRP Conjugate Concentrate	None
Concentrate Diluent / Assay Diluent / HRP Diluent***	< 1 % w/v Animal Protein products; 0.1 % v/v Kathon CG/ICP

TMB Substrate solution	<0.1 % v/v Tetramethylbenzidine Dihydrochloride
TMB STOP Solution	< 2% v/v Hydrochloric Acid; < 2% v/v Sulfuric Acid
Antibody Diluent*	< 1 % w/v Animal Protein products, 0.1 % v/v Kathon CG/ICP
Standard Diluent**	<20 % v/v Animal Protein products; 0.1 % v/v Kathon CG/ICP

+ Animal protein products have been tested negative for adventitious viral agents by the manufacturers. It is recommended to wear suitable gloves and a lab coat when working with above products. Components containing Animal protein products must be disposed according to state and federal regulations of disposal of bio hazardous materials.

++ Only in product 42120

+++ Only in product 41415

** Only in products 41415 and 46100

* Only in products 41110 and 42410

*** Only in product 42410

1) Kathon CG/ICP

- Ingredients: 5-Chloro-2-Methyl-4-Isothiazolin-3-One, 2-Methyl-4-Isothiazolin-3-One, Magnesium Chloride anhydrous, Magnesium Nitrate, Copper Nitrate Trihydrate, water
- CAS Number: 26172-55-4, 2682-20-4, 7786-30-3, 10377-60-3, 10031-43-3
- EC Number: 247-761-7 (Kathon CG/ICP)
- Symbol: C
- R-Phrases: R 34, 43

2) TMB Dihydrochloride

- 3,3',5',5' Tetramethylbenzidine Dihydrochloride
- Molecular Formula: $C_{16}H_{20}N_2 \cdot 2HCl \cdot H_2O$
- CAS Number: 64285-73-0
- EC Number: 264-769-6
- Symbol: Xn
- R-Phrases: R20/21/22, R40

3) STOP Solution

- | | | |
|----------------------|----------------------|------------------|
| • Ingredient: | a) Hydrochloric Acid | b) Sulfuric Acid |
| • Molecular formula: | a) HCL | b) H_2SO_4 |
| • Synonym: | a) Muriatic acid | b) none |
| • CAS Number: | a) 7647-01-0 | b) 7664-93-9 |
| • EC Number: | a) 231-595-7 | b) 231-639-5 |
| • Symbol: | a) C | b) C |
| • R-Phrases: | a) R34, R37 | b) R35 |

4) Animal Protein products

- | | | |
|---------------|----------------------------|----------------------------|
| • Ingredient: | a) Bovine proteins | b) Mouse serum |
| • CAS Number: | a) 9048-46-8 | b) not available |
| • EC Number: | a) 232-936-2 | b) not available |
| • R-phrase: | a) No information required | b) No information required |

5) Sodium Azide

- Molecular formula: NaN_3
- CAS Number: 26628-22-8
- EC Number: 247-852-1
- Symbol: T+, N
- R-phrase: R28, R32, R50, R53

Section 3: Hazards Identification

Emergency Overview

1) Kathon CG/ICP

Note: Information on toxicity at the supplied concentration of Kathon CG/ICP (0.1 % v/v) is unavailable. The following information pertains to pure Kathon CG/ICP.

- Corrosive
- Skin sensitizer
- May cause burns

2) TMB Dihydrochloride

- Avoid contact and inhalation.

3) STOP Solution

Ingredients: a) < 2 % v/v Hydrochloric acid b) < 2 % v/v Sulfuric acid

Note: Information on toxicity at the supplied concentration of Sulfuric Acid and Hydrochloric Acid is unavailable. The following information pertains to 99% Sulfuric Acid and 99 % Hydrochloric Acid.

- Corrosive
- Harmful by inhalation
- Causes skin and eye burns
- Toxic if swallowed

4) Animal protein products

- Bovine Proteins
 - Contains Bovine proteins that can be mild irritant to the mucous membrane, respiratory tract
 - Bovine proteins can cause allergic reactions to users with an allergy to dairy products.
- Mouse Serum
 - No known OSHA hazards.
 - Not a dangerous substance according to GHS.
 - May be harmful if inhaled. May cause respiratory tract irritation
 - May be harmful if absorbed through skin. May cause skin irritation.
 - May cause eye irritation.
 - May be harmful if swallowed.

5) Sodium Azide:

Note: Information on toxicity at the supplied concentration of Sodium Azide (<0.003 %) is unavailable. The following information pertains to pure Sodium Azide in powder form.

- Very toxic by inhalation, in contact with skin and if swallowed. Can be fatal.
- Readily absorbed through skin
- Reacts with lead and copper to form highly explosive metal azides
- Heating causes explosion
- Very toxic to aquatic organisms, can cause long term adverse effects to aquatic environment

Section 4: Symptoms and First Aid Measures

Symptoms:

- *Inhalation:* Lung irritants.
- *Skin Contact:* May be skin irritants and non-sensitizers. Skin inflammation is characterized by itching, reddening, and occasional blistering.
- *Eye Contact:* Eye irritants.
- *Ingestion:* Can cause nausea and vomiting.

First Aid Measures:

- *Ingestion / Oral exposure:* If the person is conscious wash mouth with water. If large quantity of any component is swallowed call a physician immediately. Loosen any tight clothing.
- *Inhalation:* If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms persist or reappear.
- *Skin Contact:* If large quantity of any component is in contact with the skin, wash with ample amounts of soap and water for at least 15 minutes. Cover the skin with an emollient. Get medical attention if irritation develops. Cold water may be used.
- *Eye Contact:* Check for and remove any contact lenses. Immediately flush eyes with ample amounts of water for at least 15 minutes. Cold water may be used. Get medical attention if irritation occurs.

Section 5: Fire Fighting Measures

- *Flammability of Product:* May be combustible at extreme temperatures.
- *Flash Points:* Not available for the provided concentrations.
- *Fire Hazards in presence of Various Substances:* Not available
- *Fire Fighting Media:* Small Fire: Use DRY chemical powder.
Large fire: Use water spray, fog or foam. Do not use water jet.
- *Protective Clothing (Fire):* Use an approved/certified respirator or equivalent. Use protective clothing to avoid contact with skin and eyes.
- *Special Remarks on Fire Hazards:* Not available
- *Hazardous thermal decomposition products:* STOP solution: Hydrogen chloride, hydrogen gas, oxides of sulfur, chlorine. Animal Protein products: Toxic fumes, Sodium Azide: Pure Sodium Azide (not at the supplied concentration) explodes upon decomposition producing Nitrogen gas and Sodium

Section 6: Accidental Release Measures

- *Procedures of Personal Precautions:* Wear safety glasses, lab coat and use an approved certified respirator or equivalent. Must wear gloves. Avoid breathing vapors, mist or gas.
- *Small Spill and Leak:* Use appropriate tools to put the spilled solid in a waste disposal container. Finish cleaning by water on the contaminated surface and dispose of according to local and regional authority requirements.

- **Environmental Precautions and Clean-up Methods:** Use a shovel to put the material into a waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow the water to evacuate through the sanitary system.

Section 7: Handling and Storage

- **Handling:** Avoid breathing vapors, contact with skin or ingestion. Wear a fully-buttoned lab coat and gloves while working with the product.
- **Storage:** Keep all containers tightly closed in a cool and well-ventilated area. Refer to the storage temperatures indicated in the protocol. It is recommended to use original containers for storage. Do not wash out container and use it for other purposes.
- **Intended Use:** Refer to the protocol supplied for proper use. If questions arise please contact technical support info@interferonsource.com
- **Packaging materials:** Use original containers.

Section 8: Exposure Controls/Personal Protection

- Engineering Controls
 - Safety Shower
 - Eye Wash
 - Ventilation
- Personal Protective Equipment
 - Lab Coat
 - Gloves
 - Safety Glasses (recommended)
 - NIOSH approved respirator for pure Sodium Azide in powder form. Respirator not required for handling bottle C in product 41415.
- Exposure Limits:
 - 1) Kathon CG/ICP
OSHA PEL- Not Established
ACGIH TLV- Not Established
 - 2) TMB Substrate Solution
Ingredient: 3', 3'-5', 5' Tetramethylbenzidine dihydrochloride
OSHA PEL-Not Established
ACGIH TLV: Not Established
 - 3) TMB Stop Buffer
 - Sulfuric Acid
OSHA PEL- 1 mg/m³ TWA for 8 H
ACGIH TLV-1 mg/m³ TWA for 8 H
 - Hydrochloric Acid
OSHA PEL-7.5 mg/m³TWA for 8 H
ACHGIH TLV-7.5 mg/m³TWA for 8 H
 - 4) Animal protein product
OSHA PEL- Not applicable

ACGIH TLV- Not applicable

- 5) Sodium Azide (powder form)
OSHA PEL: 0.1 PPM for HN3
ACGIH TLV- 0.1 PPM for HN3

Section 9: Physical and Chemical Properties

- Physical State and Appearance: All components besides the plates are in liquid state. For product 41410, vial B (IFN standard) is supplied frozen.
- Dispersion properties: Not available
- Solubility: Not applicable
- Odor: Odorless
- Taste: Not available
- Color: Component E in all products, component C in products 41415 and 46100 and component B in product 46100 are light brown in color. All remaining components are Colorless. The color of the liquid components may vary with time or change in pH.

Section 10: Stability and Reactivity

- Stability and Reactivity: All components are stable at recommended storage conditions. At the supplied concentration, TMB Stop buffer can react with metals and strong bases.
- Conditions to Avoid: Extreme temperatures.
- Materials to Avoid: Avoid contact of metals and strong bases with the TMB Stop Buffer.
- Hazardous Decomposition Products:
 - Reaction of TMB Stop buffer with metals and strong bases: Hydrogen chloride, Chlorine, Hydrogen Gas, and Oxides of Sulfur.
 - Combustion of Animal Protein Products may emit toxic fumes.
 - Pure Sodium Azide explodes on decomposition producing Nitrogen gas and Sodium
 - There are no hazardous decomposition products for the remaining components of the kit.
- Hazardous Polymerization: Will not occur

Section 11: Toxicological Information

- 1) Kathon CG/ICP

This information is based on data on pure Kathon CG/ICP. At the supplied concentration Kathon CG/ICP 0.1 % v/v, the toxicological information has not been established.

LD50	Rat	Rabbit
Oral:	75 mg/kg	-----
Skin:	-----	>5000 mg/kg

Chronic effects on Humans: None known

Other toxic effects on Humans: Causes burns in the eye, skin and is extremely destructive to the mucous membrane of the upper respiratory tract.

Special remarks on Chronic Effects on Humans: None

Special remarks on Other Toxic effects on Humans: Inhalation may result in spasm, inflammation, and edema. Symptoms: burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting.

Special remarks on toxicity to Animals: Not available

- 2) TMB dihydrochloride

LD50: Not available

Chronic effects on Humans: None known

Other toxic effects on Humans: Possible irritant to eyes, mucous membrane and respiratory track.

Special Remarks on Chronic Effects on Humans: None

Special Remarks on other Toxic Effects on Humans: None

Special remarks on toxicity to Animals: Not available

3) Stop Solution

This information is based on data on pure Sulfuric Acid (95-98 % v/v) and pure Hydrochloric Acid (95-98 % v/v). At the supplied concentration (< 2 % v/v), the toxicological information has not been established. It is recommended that safety goggles, gloves and a lab coat must be worn while working with STOP solution.

LD50	Sulfuric Acid (Rabbit)	Hydrochloric Acid (Rat)
Oral:	900 mg/kg	2140 mg/kg

Chronic effects on Humans: Sulfuric Acid-Group 1 Carcinogen, Hydrochloric Acid- Group 3 Carcinogen.

Other toxic effects on Humans: Causes severe burns to eyes, mucous membrane and respiratory track. Very toxic if swallowed.

Causes skin burns on contact.

Special Remarks on Chronic Effects on Humans: None

Special Remarks on other Toxic Effects on Humans: None

Special Remarks on toxicity to Animals: None

4) Animal protein products

LD50: Not available

Chronic effects on Humans: None known

Other toxic effects on Humans: Possible mild irritant to eyes, mucous membrane and respiratory track.

Special Remarks on Chronic Effects on Humans: None

Special remark on other toxic effects on humans: Users with an allergy to dairy products may be allergic to bovine proteins in components containing animal protein products. Handle the product with appropriate personal protection gear if there is a known allergy to dairy products. To the best of our knowledge, animal protein products have been tested negative for adventitious viral agents by the manufacturers.

5) Sodium Azide

This information is based on data on pure Sodium Azide. At the supplied concentration (< 0.003 % w/v), the toxicological information has not been established. It is recommended that gloves and a lab coat must be worn while working with bottle C in product 41415.

LD50	Rat	Rabbit
Oral:	27 mg/kg	-----
Skin:	-----	20 mg/kg
Inhalation	37 mg/m ³	-----

Chronic effects on Humans: Not a known Carcinogen.

Other toxic effects on Humans: Irritant if absorbed through skin. May be fatal is inhaled or swallowed.

Special Remarks on Chronic Effects on Humans: Affects the nerves, heart and brain.

Special remarks on toxicity to Animals: Tumorigen and Mutagen in rats. Causes hyposensitivity on over exposure

Section 12: Ecological Information

- Pure Sodium Azide is highly toxic to aquatic life forms.

Section 13: Disposal Considerations

- For every component, waste must be disposed according to federal, state and local environment control regulations.

Section 14: Transport Information

- DOT Proper Shipping Name: None
- The kit is transported as Non-Hazardous. All products and materials are transported at storage conditions mentioned in the protocol.

Section 15: Regulatory Information

Regulatory information on the components at their supplied concentrations is not available. Please refer below for definitions of applicable risk phrases to pure form of hazardous components. Risk phrases at supplied concentrations not available.

Risk Phrases:

- 20 Harmful by inhalation
- 21 Harmful in contact with skin
- 22 Harmful if swallowed
- 28 Very toxic if swallowed
- 32 Contact with acids liberates very toxic gas
- 34 Causes burns
- 35 Causes severe burns
- 37 Irritating to the respiratory system
- 40 Possible risk of cancer
- 43 May cause sensitization by skin contact
- 50 Very toxic to aquatic organisms
- 53 May cause long-term adverse effects in the aquatic environment

International regulations:

Japan: Hydrochloric Acid (Chemical Substances Control Law classification: Existing, Industrial Safety and Health Act: MSDS required, Air Pollution Control Law); Sulfuric Acid (Chemical Substances Control Law classification: Existing, Industrial Safety and Health Act: MSDS required, Air Pollution Control Law); Kathon CG/ICP (Chemical Substances Law classification: Existing); Sodium Azide (Chemical Substances Law classification: Existing type III monitoring, Industrial Safety and Health Act: MSDS required); Animal Protein Products (no information available)

Note: Product not classified according to EU regulations. For information on Hazard Symbol and EC number of pure form of hazardous constituents, refer to section 2. Japanese regulations pertain to pure forms of components, and not for forms at the concentrations used in the product(s).

Section 16: Other Information

Disclaimer: For research use only. Not for drug, household or other uses.

The above information is correct to the best of our knowledge. This information is not guaranteed to be all inclusive. The user should handle all materials with care using the MSDS as a guideline only. PBL Biomedical Laboratories shall not be held responsible for any damage resulting from handling or from contact with the above product.