Section 1: Product and Company Identification

Product Name: Antibodies and Interferon Products

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Manufacturer: PBL Biomedical Laboratories
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This MSDS is applicable to the following products in accordance with OSHA CFR 29 1910.1200 and includes products exempt from requiring MSDS for informational purposes.

Product Number	Product Name	Composition
11002	Human IFN Alpha Sampler (12 individual species)	< 1% Bovine Serum Albumin (BSA)
11100	Human IFN Alpha A (Alpha 2a)	< 1% BSA
11101	Human IFN Alpha A, carrier- free	None
11105	Human IFN Alpha 2 (Alpha 2b)	<1 % BSA
11115	Human IFN Alpha B2 (Alpha 8)	< 1% BSA
11120	Human IFN Alpha C (Alpha 10)	< 1% BSA
11125	Human IFN Alpha D (Alpha1{Val 114})	< 1% BSA
11130	Human IFN Alpha F (Alpha 21)	< 1% BSA
11135	Human IFN Alpha G (Alpha 5)	< 1% BSA
11145	Human IFN Alpha H2 (Alpha 14)	< 1% BSA
11150	Human IFN Alpha I (Alpha 17)	< 1% BSA
11160	Human IFN Alpha J1 (Alpha 7)	< 1% BSA
11165	Human IFN Alpha K (Alpha 6)	< 1% BSA

11175	Human IFN Alpha 1 (Alpha D {Ala 114})	< 1% BSA
11177	Human IFN Alpha 4a (Alpha M1)	< 1% BSA
11180	Human IFN Alpha 4b (Alpha 4)	< 1% BSA
11190	Human IFN Alpha WA (Alpha 16)	< 1% BSA
11200	Universal Type 1 IFN {Human IFN Alpha A/D (Bg111)}	< 1% BSA
11350	Human leukocyte IFN	None
11395	Human IFN Omega	≤ 2% BSA
11410	Human IFN Beta 1 a, mammalian	None
11415	Human IFN Beta 1 a, mammalian	<1% w/v Sodium Acetate, < 1% BSA
11420	Human IFN Beta 1 b, E. coli	< 1% BSA
11450	Human IFN Kappa	None
11500	Human IFN Gamma	< 1% BSA
11810	Human Interleukin-2	< 1% BSA
11815	Human Interleukin-3	< 1% BSA
11820	Human Interleukin-28/Interferon lambda 2	< 1% BSA
11821	Human Interleukin-28/Interferon lambda 2, carrier free	None
11825	Human Interleukin-29/Interferon lambda 1	< 1% BSA
11826	Human Interleukin-29/Interferon lambda 1, carrier free	None
11965	Erythropoietin (EPO)	< 1% BSA
12100	Mouse IFN Alpha A	< 1% BSA

12105	Mouse IFN Alpha 1	< 1% BSA
12115	Mouse Interferon Alpha 4, mammalian	< 1% BSA
12125	Mouse Interferon alpha 11	< 1% BSA
12130	Mouse Interferon alpha 13	< 1% BSA
12295	Mouse Limitin	< 1%BSA
12400	Mouse IFN Beta	< 1% BSA
12401	Mouse IFN Beta, carrier free	None
12405	Mouse IFN Beta, mammalian	< 1% BSA
12820	Mouse Interleukin-28B/Interferon lambda 3	< 1% BSA
12821	Mouse Interleukin-28B/Interferon lambda 3, carrier free	None
13100	Rat IFN Alpha	< 1% Rat Serum Albumin (RSA)
13400	Rat IFN Beta	None
13500	Rat IFN Gamma	< 1% BSA
14110	Rhesus Cynomolgus Monkey IFN Alpha 2	< 1% BSA
15100	Feline IFN Alpha	< 1% BSA
16100	Cynomolgus Interferon Alpha 2 [Ile 16]	< 1% BSA
16105	Cynomolgus Interferon Alpha 2 (Ile 16), mammalian	< 1% BSA
17105	Porcine Interferon Alpha, mammalian	<1 %BSA
19615	Bovine IFN Tau 2B	< 1% BSA
21100	Mab to Human IFN-Alpha, Mouse IgG1 κ, neutralizing, clone (MMHA-2)	< 1% BSA

21101	MAb to Human IFN-Alpha, Mouse IgG1 κ, non-neutralizing, clone (MMHA-3)	< 1% BSA
21105	MAb to Human IFN-Alpha, Mouse IgG1 κ, neutralizing, clone (MMHA-1)	< 1% BSA
21110	MAb to Human IFN-Alpha, Mouse IgG2b κ, neutralizing, clone (MMHA-8)	< 1% BSA
21112	MAb to Human IFN-Alpha, Mouse IgG1 κ, neutralizing, clone (MMHA-11)	< 1% BSA
21112-3	MAb to Human IFN-Alpha-FITC labeled, Mouse IgG1 κ, clone (MMHA-11)	< 1% BSA, 0.05 % Kathon CG/ICP
21116	MAb to Human IFN-Alpha, Mouse IgG1 κ, neutralizing, clone (MMHA-13)	< 1% BSA
21118	MAb to Human IFN-Alpha, Mouse IgG1 κ, neutralizing, clone (MMHA-17)	< 1% BSA
21125	MAb to Human IFN-Alpha, Mouse IgG1 κ, neutralizing, clone (MMHA-6)	< 1% BSA
21127	MAb to Human IFN-Alpha, Mouse IgG1 κ, neutralizing, clone (MMHA-9)	< 1% BSA
21129	MAb to Human IFN-Alpha, Mouse IgG1 κ, neutralizing, clone (MMHA-14)	< 1% BSA
21375	MAb to Hu-IFN-Alpha/Beta R1 (IFNAR1), Mouse IgG1, neutralizing, (MMHAR-1)	None
21376	MAb to Hu-IFN-Alpha/Beta R1 (IFNAR1)- CFS-labeled, Mouse IgG1, (MMHAR-1)	<1% BSA, 0.1% Sodium Azide
21385	MAb to Hu-IFN-Alpha/Beta R2 (IFNAR2), Mouse IgG2A, neutralizing, (MMHAR-2)	< 1% BSA
21385-3	MAb to Hu-IFN-Alpha/Beta R2-PE-labeled, Mouse IgG2A, clone (MMHAR-2)	1.5% BSA, 0.1 % Kathon CG/ICP
21395	MAb to Human IFN-Omega, Mouse IgG1, neutralizing, clone (OMG-4)	None
21400-1	MAb to Human IFN-Beta, Mouse IgG1 kappa, neutralizing, clone (MMHB-3)	< 1% BSA
21400-3	MAb to Hu-IFN-Beta-FITC labeled, Mouse IgG1 kappa, clone (MMHB-3)	< 1% BSA, 0.05 % Kathon CG/ICP
21405	MAb to Human IFN-Beta , Mouse IgG2A kappa, neutralizing, clone (MMHB-1)	< 1% BSA
21410	MAb to Hu-IFN-Beta, Mouse IgG1, neutralizing, clone (MMHB-2)	None
21450	MAb to Human Interferon Beta, Mouse IgG1, neutralizing, clone (MMHB-12)	< 1% BSA

21455	MAb to Human Interferon Beta, Mouse IgG3, neutralizing, clone (MMHB-13)	< 1% BSA
21460	MAb to Human Interferon Beta, Mouse IgG2B, neutralizing, clone (MMHB-14)	< 1% BSA
21465	MAb to Human Interferon Beta, Mouse IgG2A, neutralizing, clone (MMHB-15)	< 1% BSA
21470	MAb to Human Interferon Beta, Mouse IgG1, neutralizing, clone (MMHB-16)	< 1% BSA
21500	MAb to Human Interferon Gamma, Mouse IgG1, neutralizing, clone (MMHG-1)	< 1% BSA
21501-3	MAb to Hu-Interferon-Gamma FITC labeled, Mouse IgG1	< 1% BSA, 0.05 % Kathon CG/ICP
21550	MAb to Human Interferon Gamma, Mouse IgG1, non-neutralizing, clone (MMHG-2)	< 1% BSA
21585	MAb to Human Interferon Gamma RC1,Mouse IgG1,non-neutralizing, (MMHGR-2)	< 1% BSA
22100-1	MAb to Mouse Interferon Alpha, Rat IgG1 neutralizing, clone (RMMA-1)	None
22100-3	MAb to Mouse Interferon Alpha-FITC labeled, Rat IgG, clone (RMMA-1)	< 1% BSA, 0.05 % Kathon CG/ICP
22400-1	MAb to Mouse Interferon Beta, Rat IgG, neutralizing, clone (RMMB-1)	< 1% BSA
22400-3	MAb to Mouse Interferon Beta-FITC labeled, Rat IgG, clone (RMMB-1)	< 1% BSA, 0.05 % Kathon CG/ICP
22500	MAb to Mouse Interferon Gamma, Rat IgG1 gamma, neutralizing, clone (RMMG-1)	< 1% BSA
23500	MAb to Rat Interferon Gamma, Mouse IgG1 lambda, neutralizing, clone (DB-1)	None
23510	MAb to Rat Interferon Gamma, Mouse IgG1, neutralizing, clone (DB-13)	None
23515	MAb to Rat Interferon Gamma, Mouse IgG2A, neutralizing, clone (DB-14)	None
23520	MAb to Rat Interferon Gamma, Mouse IgG2A, non- neutralizing, clone (DB-10)	None
27100	MAb to Pig Interferon Gamma, Mouse IgG1, neutralizing, clone (K9)	None
27105	MAb to Pig Interferon Gamma, Mouse IgG1, neutralizing, clone (F17)	None
31100	PAb to Human Interferon Alpha, Sheep Serum, neutralizing	Neat Serum or Serum diluted in phosphate-buffered saline (PBS)

31101	PAb to Human Interferon Alpha, Rabbit Serum, neutralizing	Neat Serum or Serum diluted in PBS
31130	PAb to Human Interferon Alpha, Rabbit Serum, neutralizing	Neat Serum or Serum diluted in PBS
31375-3	PAb to Hu-Interferon-Alpha/Beta R1 (InterferonAR1) Biotin labeled, Goat IgG	None
31400	PAb to Human Interferon Beta, Sheep Serum, neutralizing	Neat Serum or Serum diluted in PBS
31401	PAb to Human Interferon Beta, Sheep Serum, neutralizing	Neat Serum or Serum diluted in PBS
31405	PAb to Human Interferon Beta, Protein A purified, Rabbit IgG	None
31410	PAb to Human Interferon Beta, Rabbit Serum, neutralizing	Neat Serum or Serum diluted in PBS
31420-1	PAb to Human Interferon Beta , Goat IgG, affinity purified neutralizing	None
31420-3	PAb to Human Interferon Beta, Biotin labeled, Goat IgG, affinity purified	None
31500	PAb to Human Interferon Gamma, Rabbit Serum	Neat Serum or Serum diluted in PBS
32100	PAb to Mouse Interferon Alpha, Rabbit Serum, neutralizing	Neat Serum or Serum diluted in PBS
32120	PAb to Mouse Interferon Alpha, Chicken IgY, purified, non-neutralizing	< 1% BSA
32400	PAb to Mouse Interferon Beta, Rabbit Serum, neutralizing	Neat Serum or Serum diluted in PBS
32401	Pab to Mouse Interferon Beta, Protein A purified, Rabbit IgG	None
32500	PAb to Mouse Interferon Gamma, Rabbit Serum	Neat Serum or Serum diluted in PBS
33100	PAb to Rat Interferon Alpha, Rabbit IgG, protein A purified, neutralizing	None
33400	PAb to Rat Interferon Beta, Rabbit IgG, protein A purified, neutralizing	None
33405	PAb to Rat Interferon Beta, Rabbit IgG, ligand purified, neutralizing	None
33500	PAb to Rat Interferon Gamma, Protein A Purified Rabbit IgG, neutralizing	None
33505	PAb to Rat Interferon Gamma; Rabbit Ig, ligand purified, neutralizing	None

Section 2: Composition / Information on Ingredient

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) Bovine Serum Albumin (BSA) and Rat Serum Albumin (RSA)

- Ingredient: Serum Albumin
- CAS Number: 9048-46-8
- EC Number: 232-936-2
- R-phrase: No information required.

3) Neat Serum and IgG

- CAS Number: N/A
- EC Number: N/A
- R-phrase: No information required.
- Note: The serum derived products, to the best of the supplier's knowledge, were collected from animals that did not show signs of List A* (OIE) diseases and were not vaccinated against the diseases of List A (OIE). www.oie.int/eng/maladies/en_classification.htm
- The animals were tested negative for specific pathogens prior to bleed.

4] Sodium Acetate

- CAS Number: 127-09-3
- EC Number: 204-823-8
- R-phrase: Not available

5) Sodium Azide

- Molecular formula: NaN3
- 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: The following information pertains to pure Kathon CG/ICP. Information on toxicity at the supplied concentration of Kathon CG/ICP (< 0.2 % v/v) is unavailable.

- Corrosive
- Skin sensitizer
- May cause burns

2) BSA and RSA

- Mild irritants to the mucous membrane, and respiratory tract
- BSA can cause allergic reactions to users with an allergy to dairy products.

3) Neat Serum and IgG

- Universal protection measures are recommended.

4] Sodium Acetate

Note: The following information pertains to pure Sodium Acetate anhydrous. Information on toxicity at the supplied concentration of Sodium Acetate (< 1 % w/v) is unavailable.

- Causes irritation to eyes, skin, and GI tract (large amounts)

5) Sodium Azide:

Note: 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*: Sodium Azide: Pure Sodium Azide (not at the supplied concentration) explodes upon decomposition producing Nitrogen gas and Sodium oxide

Section 6: Accidental Release Measures

- *Procedures of Personal Precautions*: Wear safety classes, lab coat and use an approved certified respirator or equivalent. Must wear Gloves.
- *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 contact with skin and eyes, and avoid ingestion.
- *Storage:* Refer to the storage temperatures indicated in the protocol. It is recommended to use original containers for storage.
- *Intended Use:* Refer to the protocol supplied for proper use. If questions arise please contact info@interferonsource.com
- *Packaging materials:* Use original containers.

Section 8: Exposure Controls/Personal Protection

- Engineering Controls
  - Safety Shower and Eye Wash

- Personal Protective Equipment
  - Body: Lab Coat
  - Hands: Gloves
  - Eyes: Safety Glasses (recommended)

➢ NIOSH approved respirator for pure Sodium Azide in powder form. Respirator not required for handling product 21376.

- Exposure Limits:

1) Kathon CG/ICP
OSHA PEL- Not Established
ACGIH TLV- Not Established

2) BSA and RSA
OSHA PEL- Not Established
ACGIH TLV- Not Established

3) Neat Serum and IgG
OSHA PEL- Not Established
ACGIH TLV- Not Established

4) Sodium Acetate
OSHA PEL- None listed
ACGIH TLV- None listed

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: May be frozen or in liquid state depending on storage conditions.
- Dispersion properties: Not available
- Solubility: Not applicable
- Odor: Odorless
- Taste: Not available
- Color: Colorless. The color may change with change in pH. Neat serum may have a brownish tinge.

Section 10: Stability and Reactivity

- Stability and Reactivity: The product is stable.
- Conditions to Avoid: Extreme temperatures.
- Materials to Avoid: None. Sodium Acetate is incompatible with strong oxidizing agents.
- Hazardous Decomposition Products: BSA: Toxic Fumes, Sodium Acetate: Carbon monoxide, carbon dioxide, toxic fumes of sodium oxide, Pure Sodium Azide: Nitrogen gas and Sodium oxide
- 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 of Kathon CG/ICP (< 0.2 % 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] BSA and RSA
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 remarks on toxicity to Animals: Not available
Special Remarks on other Toxic Effects on Humans: **BSA may be an allergen to users with an allergy to dairy products. Handle the product with appropriate personal protection gear if there is a known allergy to dairy products.**

3] Neat Serum and IgG
Not Applicable. It is recommended to observe universal precautions while handling serum based products.

4] Sodium Acetate
This information is based on data on pure Sodium Acetate anhydrous. At the supplied concentration of Sodium Acetate (< 1 % w/v), the toxicological information has not been established.

LD50:	Rat	Rabbit	Mouse
Oral:	3530 mg/kg	--------	6891 mg/kg
Skin:	-------	>10 gm/kg	----------

Chronic effects on Humans: None known
Other toxic effects on Humans: Irritant to eyes, skin, and GI tract (large amounts)
Special Remarks on Chronic Effects on Humans: Not available
Special remarks on toxicity to Animals: Not available
Special Remarks on other Toxic Effects on Humans: Not available

5] Sodium Azide
This information is based on data on pure Sodium Azide. At the supplied concentration (< 0.1 % w/v), the toxicological information has not been established. It is recommended that gloves and a lab coat be worn while working with product 21376

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 all materials 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.

Section 15: Regulatory Information

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

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
- 37 Irritating to the respiratory system
- 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: Chemical Substances Control Law: Kathon CG/ICP (classification: Existing), Sodium Acetate (classification: Existing); Biodegradation and Bioconcentration of Existing Chemical Substances under the Chemical Substances Control Law: Sodium Acetate (listed); Sodium Azide (Chemical Substances Law classification: Existing type III monitoring, Industrial Safety and Health Act: MSDS required)

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 R & D use only. Not for drug, household or other uses.
Warranty: 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.