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# Material Safety Data Sheet

## Colorimetric Non-Enzymatic Nitric Oxide Assay Kit
## Product #NB 88

The information contained herein is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Oxford Biomedical Research, Inc. shall not be held liable for any damage resulting from handling or from contact with this product.

See our catalog for additional terms and conditions of sale.

Hazards identified with this product are those associated with the following components:

| Component | Name |
|---|---|
| NB 88a | Cadmium beads |
| NB 88d | Sulfanilamide in 3N HCl |
| NB 88e | N-(1-Naphthyl) ethylenediamine dihydrochloride |
| NB 88j | 0.1 M HCl (hydrochloric acid) |
| NB 88k | 0.1 M NH4OH (ammonium hydroxide) |

**Information on Ingredients:**

| | | |
|---|---|---|
| CAS Registry Number: | 7440-43-9 | Cadmium (product # NB 88a) |
| | 7647-01-0 | Hydrochloric Acid (product # NB 88d, NB 88j) |
| | 1465-25-4 | N-(1-Naphthyl) ethlenediamine dihydrochloride (product # NB 88e) |
| | 63-74-1 | Sulfanilamide (product # NB 88d) |
| | 1336-21-6 | Ammonium Hydroxide (product # NB 88k) |

**Hazardous Identification:**

Acute Effects:

Cadmium: Highly toxic. Toxic by inhalation in contact with the skin or if swallowed. Possible carcinogen. Possible risk of infertility. Possible risk of harm to unborn child.

Hydrochloric Acid: Material is extremely destructive to the eyes, skin, mucous membranes, and the upper respiratory tract. Inhalation of material may be fatal due to the following: spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Exposure to material may cause the following: burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.

N-(1-Naphthyl) ethlenediamine dihydrochloride: Material may cause irritation to the eyes, skin, mucous membranes, and the upper respiratory tract.

Sulfanilamide: May be harmful by ingestion, inhalation or absorption through skin. Material may cause irritation to the eyes, skin, mucous membranes, and the upper respiratory tract. Exposure to material may cause sensitization. Exposure to material may cause the following: nausea, vomiting, fever, cyanosis, dizziness, dermatitis, acidosis, hepatitis, acute renal tubular necrosis, and psychosis.

Ammonium Hydroxide: Material is extremely destructive to the eyes, skin, mucous membranes, and the upper respiratory tract. Inhalation of material may be fatal due to the following: spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Ingestion of material may cause the following: burning sensation, coughing, wheezing, laryngitis, headache, nausea, vomiting convulsions and shock. Exposure to the skin and eyes may severe irritation, staining, thickening of skin or corneal damage leading to glaucoma and/ or cataracts.

Chronic Effects:

Cadmium: Damages lungs and kidneys. Carcinogen. Teratogen. Mutagen.

Sulfanilamide: There is limited evidence that Sulfanilamide is mutagenic. Until further testing has been done, it should be treated as a possible mutagen in humans.

Ammonium Hydroxide: Prolonged exposure to the skin and eyes may severe irritation, staining, thickening of skin or corneal damage leading to glaucoma and/ or cataracts. Inhalation may cause respiratory tract inflammation and lung damage.

**First Aid Measures:**

In cases of skin contact, wash immediately with copious amounts of water far at least 15 minutes. Remove contaminated clothing and shoes and wash before wearing. Consult a physician. In cases of eye contact, flush immediately with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Consult a physician. In cases of inhalation, remove to fresh air and monitor breathing. If breathing becomes difficult, give oxygen and consult a physician. If breathing stops, give artificial respiration and consult a physician. In cases of ingestion, wash mouth with water and consult the local poison center and a physician.

**Fire-Fighting Measure:**

Cadmium: Do not use water. Use suitable powder to extinguish metal fires. Toxic metal oxide fumes may be released. Fully impervious protective suit and respirator should be worn.
All Other Components: Extinguishing Media: Dry chemical powder, carbon dioxide, water spray or polymer foam. Upon thermal decomposition, it may emit toxic gases.

**Accidental Release Measures:**

Steps taken if material is released or spilled: Evacuate area. Wear a self-contained breathing apparatus, rubber boots, and heavy rubber gloves. For the vial containing Hydrochloric Acid, cover with dry lime or soda ash and sweep up using non-sparking tools and place in a suitable container. For all other vials, absorb material on sand or vermiculite. Sweep up and place in a suitable container. Avoid raising dust. Hold for appropriate disposal in accordance with the Disposal Considerations section below. Wash spill site and ventilate area after material pickup is complete.

**Handling and Storage:**

Store kit components according to the instructions included in the product insert. Avoid contact with materials. Avoid prolonged or repeated exposure. Lab should be equipped with a safety shower and an eye wash station. Wash thoroughly after handling material. Wear chemical-resistant gloves, safety goggles and protective clothing. Use should be contained under a chemical fume hood.
Additional considerations: Cadmium beads should be stored in a dry environment. Avoid contact and inhalation. Avoid repeated exposures. Wear appropriate NIOSH/MSHA approved respirator

**Stability and Reactivity:**

Stability: Stable under normal handling procedures.
**Incompatibilities and conditions to avoid:**
Cadmium: Avoid contact with oxidizing agents and acids.
Hydrochloric acid: Avoid contact with bases, amines, alkali metals, copper, copper alloys, and aluminum. Material corrodes steel. Addition of water to container may cause a violent reaction.
N-(1-Naphthyl)-ethylenediamine: Avoid contact with acids, acid chlorides, acid anhydrides, and oxidizing agents.
Sulfanilamide: Avoid contact with oxidizing agents.
Hazardous combustion or decomposition products: Upon thermal decomposition, may emit toxic gases including carbon monoxide, carbon dioxide, nitrogen oxides, sulfur oxides, and hydrogen chloride gas.
Ammonium Hydroxide: Avoid high temperatures, strong acids, heavy metals and halide salts. Note: can form explosive material when contacted with heavy metals and halide salts.

Hazardous polymerizations will not occur for all of the above.

**Toxicological Information:**

Harmful is swallowed or adsorbed through the skin. Fatal if inhaled.

Target Organs: Lungs and kidneys.

Prolonged exposures signs: Damage to the lungs or kidneys. Stomach pains, salivation, vomiting, diarrhea, chest pain and/or edema.

Please Note that cadmium exposure has been associated or suspected of having adverse effects to the kidney, ureter, bladder, cardiovascular system, respiratory system, reproductive system, effects on newborn and fetus and tumorigenic effects.

**Disposal Considerations:**

All materials should be disposed of in accordance with Federal, State and Local government guidelines.

Cadmium is a recyclable component and should be recovered for reuse.

**Transportation Information:**

Cadmium

**DOT-**
Shipping name: NA
UN# NA
Class: NA
Packing Group: NA
Labeling: NA

**IATA-**
Shipping name: NA
UN# NA
Class: NA
Packing Group NA

Sulfaniliamide

**DOT-**
Shipping name: NA
UN# NA
Class: NA
Packing Group: NA

**IATA-**
Shipping name: toxic solid, inorganic, n.o.s.
UN# NA
Class: NA
Packing Group: NA

N-(1-Naphthyl) ethylenediamine dihydrochloride

**DOT-**
Shipping name: NA
UN# NA
Class: NA
Packing Group: NA

**IATA-**
Shipping name: NA
UN# NA
Class: NA
Packing Group: NA

Hydrochloric Acid

**DOT-**
Shipping name: Hydrochloric Acid
UN# 1789
Class: 8
Packing Group: #III
Labeling: Corrosive

**IATA-**
Shipping name: Hydrochloric Acid
UN# 1789
Class: 8
Packing Group: #III/ Not PIH

Ammonium Hydroxide

**DOT-**
Shipping name: Ammonium Solutions <1%.
UN# NA
Class: NA
Packing Group: NA

**IATA-**
Shipping name: Ammonium Solutions <1%.
UN# NA
Class: NA
Packing Group: NA

**Notes and Considerations:**

Avoid contact with material. Avoid prolonged or repeated exposure. Wash thoroughly after handling. Material(s) should only be handled by qualified, experienced professionals.

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