

# MATERIAL SAFETY DATA SHEET

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Nessler Reagent  
**Catalog Number:** 2119449

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00503  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** Causes severe burns. Poison. Cumulative poison. Experimental teratogen.  
**Date of MSDS Preparation:**  
**Day:** 14  
**Month:** August  
**Year:** 2009

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Sodium Hydroxide

**CAS No.:** 1310-73-2  
**TSCA CAS Number:** 1310-73-2  
**Percent Range:** 10.0 - 20.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LDLo = 500 mg/kg.  
**LC50:** None reported  
**TLV:** 2 mg/m<sup>3</sup> Ceiling/STEL  
**PEL:** 2 mg/m<sup>3</sup>  
**Hazard:** Causes severe burns. Toxic.

### Demineralized Water

**CAS No.:** 7732-18-5  
**TSCA CAS Number:** 7732-18-5  
**Percent Range:** 70.0 - 80.0  
**Percent Range Units:** volume / volume  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

### Other component

**CAS No.:** Not applicable  
**TSCA CAS Number:** Not applicable  
**Percent Range:** < 1.0  
**Percent Range Units:** weight / weight  
**LD50:** Not applicable  
**LC50:** Not applicable  
**TLV:** Not established  
**PEL:** Not established

**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

### **Mercuric Iodide**

**CAS No.:** 7774-29-0 Contains Mercury. Dispose Per Local, State or Federal Laws.

**TSCA CAS Number:** 7774-29-0

**Percent Range:** 5.0 - 10.0

**Percent Range Units:** weight / weight

**LD50:** Oral rat LD50 = 18 mg/kg

**LC50:** None reported

**TLV:** 0.1 mg(Hg)/m<sup>3</sup> (skin)

**PEL:** 0.1 mg(Hg)/m<sup>3</sup> (skin)

**Hazard:** Poison. Cumulative poison. Experimental teratogen. Causes burns.

### **Sodium Iodide**

**CAS No.:** 7681-82-5

**TSCA CAS Number:** 7681-82-5

**Percent Range:** 5.0 - 10.0

**Percent Range Units:** weight / weight

**LD50:** Oral rat LD50 = 4340 mg/kg

**LC50:** None reported

**TLV:** Not established

**PEL:** Not established

**Hazard:** Causes moderate eye irritation.

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## **3. HAZARDS IDENTIFICATION**

### ***Emergency Overview:***

**Appearance:** Clear, yellow liquid

**Odor:** Not determined

MAY BE FATAL IF SWALLOWED OR ABSORBED THROUGH SKIN CAUSES SEVERE BURNS HARMFUL IF INHALED

CAN CAUSE KIDNEY AND CENTRAL NERVOUS SYSTEM EFFECTS

### ***HMIS:***

**Health:** 3

**Flammability:** 0

**Reactivity:** 1

**Protective Equipment:** X - See protective equipment, Section 8.

### ***NFPA:***

**Health:** 3

**Flammability:** 0

**Reactivity:** 1

**Symbol:** Not applicable

### ***Potential Health Effects:***

**Eye Contact:** Causes eye burns.

**Skin Contact:** Causes burns.

**Skin Absorption:** Harmful if absorbed through the skin Effects similar to those of ingestion

**Target Organs:** Central nervous system Kidneys

**Ingestion:** May cause: abdominal pain nausea vomiting diarrhea shock loosening of the teeth toxic nephritis (inflammation of the kidneys) liver damage kidney damage collapse death burns of the mouth and esophagus

**Target Organs:** Central nervous system Liver Kidneys

**Inhalation:** May cause: mouth soreness nausea, vomiting abdominal pain diarrhea headache muscular twitching central nervous system effects liver damage kidney damage loosening of the teeth

**Target Organs:** Central nervous system Kidneys Liver

**Medical Conditions Aggravated:** Allergies or sensitivity to mercury. Pre-existing: Eye conditions Skin conditions Respiratory conditions Liver conditions Kidney conditions Central nervous system diseases

**Chronic Effects:** Mercury is a general protoplasmic poison; it circulates in the blood and is stored in the liver, kidneys, spleen and bones. Main symptoms are sore mouth, tremors and psychic disturbances. Iodines overdose, 'iodism', may

cause skin rash, runny nose, headaches, fever and bronchitis. Chronic overexposure may cause central nervous system effects brain damage kidney damage liver damage

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental teratogen.  
**Toxicologically Synergistic Products:** None reported

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#### 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with plenty of water for 15 minutes. Call physician immediately.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.

**Inhalation:** Remove to fresh air.

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#### 5. FIRE FIGHTING MEASURES

**Flammable Properties:** During a fire, irritating and highly toxic gases may be generated by thermal decomposition.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not available

**Hazardous Combustion Products:** Toxic fumes of: mercury sodium oxides iodine compounds

**Fire / Explosion Hazards:** None reported

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Water runoff can cause environmental damage. Dike and collect water used to fight fire.

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#### 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Releases of this material may contaminate the environment. Stop spilled material from being released to the environment. Cover spilled solid material with sand or other inert material.

**Clean-up Technique:** Mercury and its compounds are extremely toxic! Avoid breathing spilled material. Avoid contact with spilled material. Absorb spilled liquid with non-reactive sorbent material. Sweep up material. Dispose of all mercury contaminated material at an E.P.A. hazardous waste facility. Dispose of material in an E.P.A. approved hazardous waste facility. Decontaminate area with commercially available mercury absorbing compounds.

**Evacuation Procedure:** Evacuate general area (50 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Product is regulated as RCRA hazardous waste. Product is regulated as a hazardous water pollutant.

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** 154

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#### 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin clothing Do not breathe mist or vapors. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.  
**Storage:** Keep away from: acids organic material ammonia Protect from: light heat freezing  
**Flammability Class:** Not applicable

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## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have a safety shower nearby. Have an eyewash station nearby. Maintain adequate ventilation to keep vapor level below TWA for chemicals in this product. Maintain general industrial hygiene practices when using this product. Use a fume hood to avoid exposure to dust, mist or vapor.

**Personal Protective Equipment:**

**Eye Protection:** chemical splash goggles

**Skin Protection:** neoprene latex gloves lab coat

**Inhalation Protection:** laboratory fume hood

**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: mist/vapor Wash thoroughly after handling. Protect from: light heat freezing Keep away from: acids/acid fumes ammonia organic materials

**TLV:** Not established

**PEL:** Not established

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## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, yellow liquid

**Physical State:** Liquid

**Molecular Weight:** Not applicable

**Odor:** Not determined

**pH:** 12.1

**Vapor Pressure:** Not available

**Vapor Density (air = 1):** Not available

**Boiling Point:** 110 C decomposes

**Melting Point:** Not available

**Specific Gravity (water = 1):** 1.265

**Evaporation Rate (water = 1):** Not determined

**Volatile Organic Compounds Content:** Not applicable

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Miscible

**Acid:** Not determined

**Other:** Not determined

**Metal Corrosivity:**

**Steel:** Not determined

**Aluminum:** Not determined

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## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Exposure to light or contamination by organic materials will affect this product's stability. Extreme temperatures

**Reactivity / Incompatibility:** Incompatible with: acids oxidizers organic materials ammonia

**Hazardous Decomposition:** Toxic fumes of: mercury iodine compounds

**Hazardous Polymerization:** Will not occur.

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## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported

**LC50:** None reported

**Dermal Toxicity Data:** Mercuric Iodide Skin rat LD50 = 75 mg/kg

**Skin and Eye Irritation Data:** None reported

**Mutation Data:** None reported  
**Reproductive Effects Data:** Mercuric Iodide Inhalation rat  $TCLo = 4870 \text{ ng/m}^3/24\text{H}$  - female 1-22 days after conception - post-implantation mortality  
**Ingredient Toxicological Data:** Mercuric Iodide Oral rat  $LD50 = 18 \text{ mg/kg}$ ; Sodium Hydroxide Oral rat  $LDLo = 500 \text{ mg/kg}$ ; Sodium Iodide Oral rat  $LD50 = 4340 \text{ mg/kg}$

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## 12. ECOLOGICAL INFORMATION

**Product Ecological Information: --**  
No ecological data available for this product.  
**Ingredient Ecological Information: --**  
No ecological data available for the ingredients of this product.

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## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** D002; D009  
**Special Instructions (Disposal):** Decontaminate any equipment or surfaces that have come in contact with mercury with commercially available mercury absorbing compounds. Dispose of all mercury contaminated material at an E.P.A. hazardous waste facility. Dispose of material in an E.P.A. approved hazardous waste facility.  
**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash. Rinsate from empty containers may contain sufficient product to require disposal as hazardous waste.  
**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

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## 14. TRANSPORT INFORMATION

**D.O.T.:**  
**D.O.T. Proper Shipping Name:** Corrosive Liquid, Toxic, N.O.S.  
(Mercuric Iodide/Sodium Hydroxide Solution)  
**DOT Hazard Class:** 8  
**DOT Subsidiary Risk:** 6.1  
**DOT ID Number:** UN2922  
**DOT Packing Group:** II

**I.C.A.O.:**  
**I.C.A.O. Proper Shipping Name:** Corrosive Liquid, Toxic, N.O.S.  
(Mercuric Iodide/Sodium Hydroxide Solution)  
**ICAO Hazard Class:** 8  
**ICAO Subsidiary Risk:** 6.1  
**ICAO ID Number:** UN2922  
**ICAO Packing Group:** II

**I.M.O.:**  
**I.M.O. Proper Shipping Name:** Corrosive Liquid, Toxic, N.O.S.  
(Mercuric Iodide/Sodium Hydroxide Solution)  
**I.M.O. Hazard Class:** 8  
**I.M.O. Subsidiary Risk:** 6.1  
**I.M.O. ID Number:** UN2922  
**I.M.O. Packing Group:** II

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

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## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**  
**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Mercuric Iodide

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Sodium Hydroxide 1000 lbs.

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Sodium Hydroxide - RQ = 1000 lbs. (454 kgs.)

**RCRA:** Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

**C.P.S.C.:** The label for this product bears the signal word "POISON" because the concentration of Sodium Hydroxide in the product is greater than/equal to 10%.

**State Regulations:**

**California Prop. 65:** WARNING - This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

**Identification of Prop. 65 Ingredient(s):** Mercuric Iodide

**California Perchlorate Rule CCR Title 22 Chap 33:**

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

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## 16. OTHER INFORMATION

**Intended Use:** Determination of ammonium nitrogen

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548) - Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. Vendor Information. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. In-house information. The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989. Technical Judgment.

**Revision Summary:** Updates in Section(s) 14,

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**Legend:**

NA - Not Applicable

w/w - weight/weight

ND - Not Determined

w/v - weight/volume

NV - Not Available

v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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