FOR ANY EMERGENCY, 24 HOURS / 7 DAYS, CALL: 1-800-654-6911 (OUTSIDE USA: 1-423-780-2970)
FOR ALL TRANSPORTATION ACCIDENTS, CALL CHEMTREC®: 1-800-424-9300 (OUTSIDE USA: 1-703-527-3887)
FOR ALL MSDS QUESTIONS & REQUESTS, CALL: 1-800-511-MSDS (OUTSIDE USA: 1-423-780-2347)

PRODUCT NAME: HTH® OTO TEST KIT

SECTION 1 PRODUCT AND COMPANY IDENTIFICATION

REVISION DATE: 03-05-2008 SUPERCEDES: 03-04-2002
MSDS NO: 15000000005
MANUFACTURER: Arch Chemicals, Inc. 501 Merritt 7 PO Box 5204 Norwalk, CT 06856-5204

THIS IS A KIT THAT CONTAINS MULTIPLE PRODUCTS. A MATERIAL SAFETY DATA SHEET FOR EACH INDIVIDUAL PRODUCT COMPRISING THIS KIT IS ATTACHED.

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THE INFORMATION IN THIS MSDS SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. ARCH CHEMICALS BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION BUT, MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MSDS IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT ARCH CHEMICALS MSDS CONTROL AT THE PHONE NUMBER ON THE FRONT PAGE TO MAKE CERTAIN THAT THIS DOCUMENT IS CURRENT.
PRODUCT NAME: HTH® OTO TEST KIT - OTO SOLUTION

1. PRODUCT AND COMPANY IDENTIFICATION

Arch Chemicals, Inc.
501 Merritt 7 PO Box 5204
Norwalk, CT 06856-5204

REVISION DATE: 03/05/2008
SUPERCEDES: 03/04/2002

MSDS Number: 000000004375
SYNONYMS: None
CHEMICAL FAMILY: Aqueous solution
DESCRIPTION / USE: Water Testing Applications
FORMULA: NOT APPLICABLE/MIXTURE

2. HAZARDS IDENTIFICATION

<table>
<thead>
<tr>
<th>OSHA Hazard Classification:</th>
<th>Corrosive to eyes., Skin irritant, Possible human carcinogen.</th>
</tr>
</thead>
</table>

Routes of Entry: Inhalation, skin, eyes, ingestion
Chemical Interactions: No known interactions
Medical Conditions Aggravated: None known or reported

Human Threshold Response Data
Odor Threshold Not established for product.
Irritation Threshold Not established for product.
Hazardous Materials Identification System / National Fire Protection Association  
Classifications

<table>
<thead>
<tr>
<th>Hazard Ratings</th>
<th>Health</th>
<th>Flammability</th>
<th>Physical / Instability</th>
<th>PPI / Special hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMIS</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NFPA</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Immediate (Acute) Health Effects

Inhalation Toxicity: Not expected to be an inhalation hazard at ambient conditions. Not expected to be toxic by inhalation. Inhalation of mist or vapor may cause irritation to the mucous membranes of the respiratory tract. Any irritation would be transient with no permanent damage expected.

Skin Toxicity: Not expected to be toxic from dermal contact. Skin contact may cause mild to moderate irritation consisting of transient redness and swelling. This irritant effect would not be expected to result in permanent damage.

Eye Toxicity: Severe irritation and/or burns can occur following exposure. Direct contact may cause impairment of vision and corneal damage. Rinsing of the eye should take place immediately.

Ingestion Toxicity: Slightly toxic if swallowed. Ingestion may cause moderate to severe irritation of the gastrointestinal tract and may also cause gastrointestinal discomfort with any or all of the following symptoms: nausea, vomiting or diarrhea.

Acute Target Organ Toxicity: This product is corrosive to the eyes, moderately irritating to the skin and upon inhalation, may cause irritation to mucous membranes and respiratory tract.

Prolonged (Chronic) Health Effects

Carcinogenicity: This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA. However, based on the orthotolidine dihydrochloride content and structurally related compounds which have been found to cause cancer in laboratory animals and are classified as possible human carcinogens, this product should also be considered to be a possible human carcinogen. Caution should be used when handling this product and exposures should be minimized.

Reproductive and Developmental Toxicity: Not known or reported to cause reproductive or developmental toxicity.
Inhalation: There are no known or reported effects from chronic exposure except for effects similar to those experienced from acute exposure.

Skin Contact: There are no known or reported effects from chronic exposure except for effects (if any) similar to those experienced from acute exposure.

Ingestion: There are no known or reported effects from chronic ingestion except for effects similar to those experienced from single exposure.

Eye Contact: Prolonged contact may result in permanent damage. Corneal involvement or visual impairment is expected.

Sensitization: This material is not known or reported to be a skin or respiratory sensitizer.

Chronic Target Organ Toxicity: This product has not been tested. However, chronic (repeated) exposures to this product would be expected to produce similar effects as seen from acute exposures.

Supplemental Health Hazard Information: No additional health information available.

3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS OR CHEMICAL NAME</th>
<th>CAS #</th>
<th>% RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>HYDROCHLORIC ACID</td>
<td>7647-01-0</td>
<td>0 - 10</td>
</tr>
<tr>
<td>Orthotolidine dihydrochloride</td>
<td>612-82-8</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>89 - 100</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Inhalation: IF INHALED: Remove individual to fresh air. Seek medical attention if breathing becomes difficult or if respiratory irritation develops.

Skin Contact: IF ON SKIN: Immediately flush skin with plenty of water for 15 minutes. If clothing comes in contact with the product, the clothing should be removed immediately and laundered before re-use. Seek medical attention if irritation develops.
Eye Contact: IF IN EYES: Immediately flush eyes with plenty of water for at least 15 minutes. Seek medical attention immediately.

Ingestion: IF SWALLOWED: Call a physician immediately. DO NOT induce vomiting unless directed to do so by a physician. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Flammability Summary (OSHA): Product is not known to be flammable, combustible, pyrophoric or explosive.

Flammable Properties
Flash Point: Not applicable
Autoignition Temperature: Not applicable
Fire / Explosion Hazards: Material will not ignite or burn. Reacts with most metals to form flammable hydrogen gas.

Extinguishing Media: Not Applicable. Choose extinguishing media suitable for surrounding materials.

Fire Fighting Instructions: In case of fire, use normal fire-fighting equipment and the personal protective equipment recommended in Section 8 to include a NIOSH approved self-contained breathing apparatus. Use water to cool containers.

Hazardous Combustion Products: During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

Upper Flammable / Explosive Limit, % in air: Not applicable
Lower Flammable / Explosive Limit, % in air: Not applicable

6. ACCIDENTAL RELEASE MEASURES

Personal Protection for Emergency Situations: Use the personal protective equipment recommended in Section 8 and a NIOSH approved self-contained breathing apparatus.

Spill Mitigation Procedures
Air Release: Contain all liquid for treatment and/or disposal as a (potential) hazardous waste.
Water Release: This material is soluble in water. Notify all downstream users of possible contamination. Divert water flow around spill if possible and safe to do so. Contain all liquid for treatment and/or disposal as a (potential) hazardous waste.

Land Release: Absorb spill with inert material (e.g., dry sand, clay, earth or commercial absorbent), then place in a chemical waste container. Contain all liquid for treatment and/or disposal as a (potential) hazardous waste.

Additional Spill Information: Stop source of spill as soon as possible and notify appropriate personnel. Utilize emergency response personal protection equipment prior to the start of any response. Evacuate all non-essential personnel. Dispose of spill residues per guidelines under Section 13, Disposal Consideration.

7. HANDLING AND STORAGE

Handling: Do not take internally. Avoid contact with skin, eyes and clothing. Upon contact with skin or eyes, wash off with water. Avoid breathing mist or vapor.

Storage: Store in a cool, dry and well ventilated place. Do not expose to direct light.

Incompatible Materials for Storage: Refer to Section 10, "Incompatible Materials."

Do Not Store At temperatures Above: Ambient is satisfactory.

Empty Container Warning: Empty containers retain hazardous residue, dispose of accordingly.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Ventilation: Local exhaust ventilation or other engineering controls are normally required when handling or using this product to keep airborne exposures below the TLV, PEL or other recommended exposure limit.

Protective Equipment for Routine Use of Product
Respiratory Protection: Wear a NIOSH approved respirator if levels above the exposure limits are possible. A NIOSH approved full-face or half-face respirator in combination with chemical goggles.

Respirator Type: A NIOSH approved full-face air purifying respirator with acid gas cartridge. Air purifying respirators should not be used in oxygen deficient or IDLH atmospheres or if exposure concentrations exceed ten (10) times the published limit.

Skin Protection: Wear impervious gloves to avoid skin contact.
Eye Protection: Use chemical goggles. Emergency eyewash should be provided in the immediate work area.

Protective Clothing Type: Butyl rubber, Neoprene, VitonTM

Exposure Limit Data

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CAS #</th>
<th>Name of Limit</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>HYDROCHLORIC ACID</td>
<td>7647-01-0</td>
<td>ZUS_ACGIH</td>
<td>2 ppm CEIL</td>
</tr>
<tr>
<td>HYDROCHLORIC ACID</td>
<td>7647-01-0</td>
<td>ZUS_OSHAP</td>
<td>5 ppm CEIL</td>
</tr>
<tr>
<td>HYDROCHLORIC ACID</td>
<td>7647-01-0</td>
<td>ZUS_OSHAP</td>
<td>7 mg/m3 CEIL</td>
</tr>
<tr>
<td>HYDROCHLORIC ACID</td>
<td>7647-01-0</td>
<td>ZUS_OSHAP</td>
<td>5 ppm CEIL</td>
</tr>
<tr>
<td>HYDROCHLORIC ACID</td>
<td>7647-01-0</td>
<td>NIOSH-IDLH</td>
<td>50 ppm</td>
</tr>
</tbody>
</table>

9. PHYSICAL AND CHEMICAL PROPERTIES

- Physical State: liquid
- Form: clear
- Color: Slight yellow
- Odor: None
- Molecular Weight: Not applicable/Mixture
- Specific Gravity: 1.0300
- pH: < 1.0
- Boiling Point: 100 DEG°C / 212 DEG°F
- Freezing Point: No data
- Melting Point: No data
- Density: 1.0000 - 1.0300g/cc
- Vapor Pressure: 17.00000000 mmHg Approximately (@ 25 Deg. C)
- Vapor Density: 0.6000
- Viscosity: No data
Fat Solubility: No data
Solubility in Water: Soluble
Partition coefficient n-octanol/water: Not applicable
Evaporation Rate: Approximately 1.00
Oxidizing: No data
Volatile, % by vol.: 99.000%
VOC Content: No data
HAP Content: No data

10. STABILITY AND REACTIVITY

Stability and Reactivity Summary:
Stable under normal conditions. Not sensitive to mechanical shock. Not sensitive to static discharge. Product will not undergo hazardous polymerization.

Conditions to Avoid:
High temperatures

Chemical Incompatibility:
Strong oxidizing agents, alkalis, metals, cyanides, sulfides, water reactive materials

Hazardous Decomposition Products:
After loss of water., Carbon monoxide, Carbon dioxide, Oxides of nitrogen, Chlorine, Hydrogen chloride

Decomposition Temperature: No data

11. TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Component</th>
<th>Animal Toxicology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral LD50 value:</td>
<td></td>
</tr>
<tr>
<td>HYDROCHLORIC ACID</td>
<td>LD50 900 mg/kg Rabbit</td>
</tr>
<tr>
<td>Dermal LD50 value:</td>
<td></td>
</tr>
<tr>
<td>HYDROCHLORIC ACID</td>
<td>No data</td>
</tr>
<tr>
<td>Inhalation LC50 value:</td>
<td></td>
</tr>
<tr>
<td>HYDROCHLORIC ACID</td>
<td>Inhalation LC50 1 h 3,124 ppm Rat</td>
</tr>
</tbody>
</table>

Product Animal Toxicity
Oral LD50 value: LD50 Believed to be approximately 3,000 mg/kg Rabbit
Dermal LD50 value: No data
Inhalation LC50 value: No data
Skin Irritation: This material is expected to be mildly to moderately irritating.

Eye Irritation: This material is expected to be corrosive.

Skin Sensitization: This material is not known or reported to be a skin or respiratory sensitizer.

Acute Toxicity: This product is corrosive to the eyes, moderately irritating to the skin and upon inhalation, may cause irritation to mucous membranes and respiratory tract.

Subchronic / Chronic Toxicity: Not known or reported to cause subchronic or chronic toxicity.

Reproductive and Developmental Toxicity: Not known or reported to cause reproductive or developmental toxicity.

Mutagenicity: Not known or reported to be mutagenic.

**HYDROCHLORIC ACID**

This chemical has been shown to be non-mutagenic based on a battery of assays.

Orthotolidine dihydrochloride

This product has been tested for mutagenicity. Tests revealed both positive and negative results.

Carcinogenicity: This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA. However, based on the orthotolidine dihydrochloride content and structurally related compounds which have been found to cause cancer in laboratory animals and are classified as possible human carcinogens, this product should also be considered to be a possible human carcinogen. Caution should be used when handling this product and exposures should be minimized.

**HYDROCHLORIC ACID**

The International Agency for Research on Cancer (IARC) has classified this product or a component of this product as a Group 3 substance, Unclassifiable as to its Carcinogenicity to Humans.

Orthotolidine dihydrochloride

Orthotolidine dihydrochloride has been evaluated for carcinogenicity by NTP. In drinking water studies, o-tolidine dihydrochloride gave clear evidence for carcinogenicity in both male and female rats and in male mice. o-Tolidine, a structurally related compound, is classified by IARC as a 2B Carcinogen (possibly carcinogenic to humans), by NTP as a Group 2 Carcinogen.
(reasonably anticipated to be a carcinogen—sufficient evidence from studies in experimental animals), by ACGIH as an A2 Carcinogen (suspected human carcinogen), and by NIOSH as a carcinogen defined with no further categorization.

12. ECOLOGICAL INFORMATION

Overview: No data for product. Individual constituents are as follows:

Ecological Toxicity Values for: HYDROCHLORIC ACID

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Method</th>
<th>LC50 or EC50</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mosquito fish</td>
<td>96 h</td>
<td>282 mg/l</td>
</tr>
<tr>
<td>Bluegill</td>
<td>48 h</td>
<td>3.6 mg/l</td>
</tr>
<tr>
<td>Fathead minnow (Pimephales promelas)</td>
<td>96 h</td>
<td>21.9 mg/l</td>
</tr>
<tr>
<td>Common shrimp (Crangon crangon)</td>
<td>(nominal, renewal)</td>
<td>48 h LC50= 260 mg/l</td>
</tr>
<tr>
<td>Daphnia magna,</td>
<td>48 h</td>
<td>0.492 mg/l</td>
</tr>
</tbody>
</table>

13. DISPOSAL CONSIDERATIONS

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THE MATERIAL. THE USER OF THE MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

Waste Disposal Summary: If this product becomes a waste, it meets the criteria of a hazardous waste as defined under 40 CFR 261 and would have the following EPA hazardous waste number: D002.

Disposal Methods: As a hazardous liquid waste it must be disposed of in accordance with local, state and federal regulations.

Potential US EPA Waste D002
14. TRANSPORT INFORMATION

Land (US DOT): NOT REGULATED AS A DOT HAZARDOUS MATERIAL
Water (IMDG): NOT REGULATED AS A HAZARDOUS MATERIAL,

Flash Point: Not applicable
Air (IATA): NOT REGULATED AS A HAZARDOUS MATERIAL,
Emergency Response Guide Number: Not applicable

15. REGULATORY INFORMATION

UNITED STATES:
Toxic Substances Control Act (TSCA): The components of this product are listed on the TSCA Inventory of Existing Chemical Substances.
EPA Pesticide Registration Number: None established

FIFRA Listing of Pesticide Chemicals (40 CFR 180): Not registered in the US under FIFRA.

Superfund Amendments and Reauthorization Act (SARA) Title III:
Hazard Categories Sections 311 / 312 (40 CFR 370.2):
  Health Immediate (Acute) Health Hazard
  Physical None

Extremely Hazardous Substance Section 302 - Threshold Planning Quantity:
  ZUS_SAR302 TPQ (threshold planning quantity) None established

Reportable Quantity (49 CFR 172.101, Appendix):
  ZUS_CERCLA Reportable quantity HYDROCHLORIC ACID
  HYDROGEN CHLORIDE Value: 5,000lbs

  ZUS_SAR302 Reportable quantity None established

Supplier Notification Requirements (40 CFR 372.45), 313 Reportable Components
ZUS_SAR313  De minimis concentration  Hydrochloric acid
          Value: 1%
3,3’-Dimethylbenzidine dihydrochloride
(o-Tolidine dihydrochloride)
          Value: 0.1%

Clean Air Act Toxic ARP Section 112r:
CAA 112R  None established

Clean Air Act Socmi:
HON SOC  None established

Clean Air Act VOC Section 111:
CAA 111  None established

Clean Air Act Haz. Air Pollutants Section 112:
ZUS_CAAHAP
US. Clean Air Act - Hazardous Air Pollutants (HAP)
1990-01-01
Listed
Hydrochloric acid

ZUS_CAAHRP  None established

CAA AP  None established

State Right-to-Know Regulations Status of Ingredients

Pennsylvania:

<table>
<thead>
<tr>
<th>CAS #</th>
<th>COMPONENT NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>7647-01-0</td>
<td>HYDROCHLORIC ACID</td>
</tr>
</tbody>
</table>

ZUSPA_RTK

US. Commonwealth of Pennsylvania - Department of Labor and Industry; Pennsylvania Code Title 34, Labor and Industry Chapter 323
1990-01-01
HYDROCHLORIC ACID
environmental hazard, hazardous substance

New Jersey:

HTH® OTO TEST KIT
<table>
<thead>
<tr>
<th>CAS #</th>
<th>COMPONENT NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>7647-01-0</td>
<td>HYDROCHLORIC ACID</td>
</tr>
<tr>
<td></td>
<td>ZUSNJ_RTK</td>
</tr>
</tbody>
</table>

US. New Jersey Department of Environmental Protection -; Bureau of Hazardous Substances New Jersey Right to Know Law, Hazardous Substance List [P.L. 1983, C. 315, NJSA 34:5A-1 et seq]
1989-12-01
HYDROGEN CHLORIDE
special health hazard substance, special health hazard, corrosive

**Massachusetts:**

<table>
<thead>
<tr>
<th>CAS #</th>
<th>COMPONENT NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>7647-01-0</td>
<td>HYDROCHLORIC ACID</td>
</tr>
<tr>
<td></td>
<td>ZUSMA_RTK</td>
</tr>
</tbody>
</table>

US. The Commonwealth of Massachusetts Department of Public Health; Massachusetts Right-to-know law, The Massachusetts Substance List, 105 CMR 670.000
1991-07-01
HYDROGEN CHLORIDE
Extraordinarily hazardous, massachusetts hazardous substance

**California Proposition 65:**

<table>
<thead>
<tr>
<th>CAS #</th>
<th>COMPONENT NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>612-82-8</td>
<td>Orthotolidine dihydrochloride</td>
</tr>
<tr>
<td></td>
<td>ZUSCA_P65</td>
</tr>
</tbody>
</table>

US. California EPA Office of Environmental Health Hazard Assessment; California Safe Drinking Water and Toxic Enforcement Act of 1986, California Health and Safety Code No Significant Risk Level 0.059 µg/day
3,3'-Dimethylbenzidine dihydrochloride Carcinogen

**WHMIS Hazard Classification:**

Canada. Canada Hazardous Products Act SOR/88-64
1988-01-20
Concentration by Weight: 1 percent by weight
841
HYDROGEN CHLORIDE

16. OTHER INFORMATION

MSDS REVISION: Revised to meet the ANSI standard of 16 sections
STATUS: First formulated version in SAP.
SECTIONS REVISED: Available upon request.
Major References:

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THE INFORMATION IN THIS MSDS SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. ARCH CHEMICALS BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION BUT, MAKES NO WARRANTY THAT IT IS ADDITIONALLY, IF THIS MSDS IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT ARCH CHEMICALS MSDS CONTROL AT THE PHONE NUMBER ON THE FRONT PAGE TO MAKE CERTAIN THAT THIS DOCUMENT IS CURRENT.
PRODUCT NAME: HTH® OTO TEST KIT - PHENOL RED SOLUTION

1. PRODUCT AND COMPANY IDENTIFICATION

Arch Chemicals, Inc.
501 Merritt 7 PO Box 5204
Norwalk, CT 06856-5204

REVISION DATE: 12/17/2007
SUPERCEDES: 01/12/2004

MSDS Number: 000000004376
SYNONYMS: None
CHEMICAL FAMILY: Aqueous solution
DESCRIPTION / USE: Water Testing Applications
FORMULA: NOT APPLICABLE/MIXTURE

2. HAZARDS IDENTIFICATION

OSHA Hazard Classification: This product is not considered to be hazardous under OSHA 29 CFR 1910.1200.

Routes of Entry: This product will not exert a significant adverse effect to health from any route of exposure.

Chemical Interactions: No known or reported interactions.

Medical Conditions Aggravated: None known or reported

Human Threshold Response Data

Odor Threshold Not established for product.

Irritation Threshold Not established for product.
Hazardous Materials Identification System / National Fire Protection Association

Classifications

<table>
<thead>
<tr>
<th>Hazard Ratings</th>
<th>Health</th>
<th>Flammability</th>
<th>Physical / Instability</th>
<th>PPI / Special hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMIS</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>NFPA</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Immediate (Acute) Health Effects

Inhalation Toxicity: Not expected to be toxic by inhalation. May cause transient irritation if inhaled as an aerosol.

Skin Toxicity: Contact would be expected to cause transient redness if not washed off and left on the skin for an extended period of time. Not considered to be a primary skin irritant. Not expected to be toxic from dermal contact.

Eye Toxicity: Contact would be expected to cause transient redness if not washed out and left in the eye for an extended period of time. No corneal involvement or visual impairment is expected. Not considered to be a primary eye irritant.

Ingestion Toxicity: Not expected to be toxic by ingestion. Ingestion may cause irritation of the gastrointestinal tract and gastrointestinal discomfort with any or all of the following symptoms: nausea, vomiting or diarrhea.

Acute Target Organ Toxicity: There are no known or reported target organ effects from acute exposure.

Prolonged (Chronic) Health Effects

Carcinogenicity: This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA.

Reproductive and Developmental Toxicity: Not known or reported to cause reproductive or developmental toxicity.

Inhalation: There are no known or reported effects from chronic exposure.

Skin Contact: There are no known or reported effects from chronic exposure.

Ingestion: There are no known or reported effects from chronic ingestion except for effects similar to those experienced from single exposure.

Sensitization: This material is not known or reported to be a skin or respiratory sensitizer.

Chronic Target Organ Toxicity: There are no known or reported target organ effects from chronic exposure.
Supplemental Health Hazard Information: No additional health information available.

### 3. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>CAS OR CHEMICAL NAME</th>
<th>CAS #</th>
<th>% RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol Red</td>
<td>143-74-8</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Sodium hydroxide</td>
<td>1310-73-2</td>
<td>0 - 1</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>98 - 100</td>
</tr>
</tbody>
</table>

### 4. FIRST AID MEASURES

- **Inhalation:** IF INHALED: Remove individual to fresh air. Seek medical attention if breathing becomes difficult or if respiratory irritation develops.
- **Skin Contact:** IF ON SKIN: Flush skin with water for 15 minutes. Take off all contaminated clothing. Seek medical attention if irritation develops.
- **Eye Contact:** IF IN EYES: Flush eyes with plenty of water for at least 15 minutes. Seek medical attention if irritation develops.
- **Ingestion:** IF SWALLOWED: Immediately drink water to dilute. Seek medical attention if symptoms develop. Never give anything by mouth to an unconscious person.

### 5. FIRE FIGHTING MEASURES

- **Flammability Summary (OSHA):** Product is not known to be flammable, combustible, pyrophoric or explosive.
- **Flammable Properties**
  - **Flash Point:** Not applicable
  - **Autoignition Temperature:** Not applicable
  - **Fire / Explosion Hazards:** Material will not ignite or burn.
- **Extinguishing Media:** Choose extinguishing media suitable for surrounding materials.
Fire Fighting Instructions: In case of fire, use normal fire-fighting equipment and the personal protective equipment recommended in Section 8 to include a NIOSH approved self-contained breathing apparatus.

Hazardous Combustion Products:
Carbon monoxide, Carbon dioxide, Oxides of sulfur

Upper Flammable / Explosive Limit, % in air: Not applicable
Lower Flammable / Explosive Limit, % in air: Not applicable

6. ACCIDENTAL RELEASE MEASURES

Personal Protection for Emergency Situations: Use the personal protective equipment recommended in Section 8 and a NIOSH approved self-contained breathing apparatus.

Spill Mitigation Procedures

Air Release: Contain all liquids for treatment or disposal.
Water Release: This material is soluble in water. Notify all downstream users of possible contamination. Divert water flow around spill if possible and safe to do so. Contain all liquids for treatment or disposal.

Land Release: Absorb spill with inert material (e.g., dry sand, clay, earth or commercial absorbent), then place in a chemical waste container. Contain all liquids for treatment or disposal.

Additional Spill Information: Stop source of spill as soon as possible and notify appropriate personnel. Utilize emergency response personal protection equipment prior to the start of any response. Evacuate all non-essential personnel. Dispose of spill residues per guidelines under Section 13, Disposal Consideration.

7. HANDLING AND STORAGE

Handling: Do not take internally. Avoid contact with skin, eyes and clothing by wearing proper protective equipment. Upon contact with skin or eyes, wash off with water. Avoid breathing mist or vapor.
Storage: Store in a cool, dry and well ventilated place. Do not expose to direct light.
Incompatible Materials for Storage: Refer to Section 10, "Incompatible Materials."
Do Not Store At temperatures Above: Ambient is satisfactory.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Ventilation: Local exhaust ventilation is recommended if vapors, mists or aerosols are generated. Otherwise, use general exhaust ventilation.

Protective Equipment for Routine Use of Product

Respiratory Protection: Not normally required. If spraying or misting occurs use a NIOSH approved respirator.
Respirator Type: Wear a NIOSH approved N95 respirator.
Skin Protection: Wear impervious gloves to avoid skin contact.
Eye Protection: Use safety glasses with side shields.
Protective Clothing Type: Impervious

Exposure Limit Data

<table>
<thead>
<tr>
<th>CHEMICAL NAME</th>
<th>CAS #</th>
<th>Name of Limit</th>
<th>Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium hydroxide</td>
<td>1310-73-2</td>
<td>ACGIH</td>
<td>2 mg/m³ Ceiling</td>
</tr>
<tr>
<td>Sodium hydroxide</td>
<td>1310-73-2</td>
<td>OSHA Z1</td>
<td>2 mg/m³ PEL</td>
</tr>
<tr>
<td>Sodium hydroxide</td>
<td>1310-73-2</td>
<td>NIOSH-IDLH</td>
<td>10 mg/m³</td>
</tr>
</tbody>
</table>

9. PHYSICAL AND CHEMICAL PROPERTIES

- Physical State: liquid
- Form: clear
- Color: Red, orange
- Odor: Sulfidic
- Molecular Weight: Not applicable/Mixture
- Specific Gravity: 1.0000
- pH: 7.6 (@ 25 Deg. C)
Boiling Point: 100 DEG°C / 212 DEG°F
Freezing Point: No data
Melting Point: No data
Density: 1.0000g/cc
Vapor Pressure: 17.00000000 mmHg
Vapor Density: 0.6000 (Air=1)
Viscosity: No data
Fat Solubility: No data
Solubility in Water: Soluble
Partition coefficient n-octanol/water: Not applicable
Evaporation Rate: Approximately 1.00
Oxidizing: No data
Volatiles, % by vol.: 98.000%
VOC Content: No data
HAP Content: No data

10. STABILITY AND REACTIVITY

Stability and Reactivity Summary:
- Stable under normal conditions. Not sensitive to mechanical shock. Not sensitive to static discharge.
- Product will not undergo hazardous polymerization.

Conditions to Avoid:
- High temperatures

Chemical Incompatibility:
- Water reactive materials

Hazardous Decomposition Products:
- Carbon monoxide, Carbon dioxide, Oxides of sulfur

Decomposition Temperature: No data

11. TOXICOLOGICAL INFORMATION

<table>
<thead>
<tr>
<th>Component</th>
<th>Animal Toxicology</th>
<th>Oral LD50 value</th>
<th>Dermal LD50 value</th>
<th>Inhalation LC50 value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol Red</td>
<td></td>
<td>LD50 &gt; 600.0 mg/kg  Rat</td>
<td>No data</td>
<td>No data</td>
</tr>
<tr>
<td>Sodium hydroxide</td>
<td></td>
<td>LD50 Believed to be 300 - 500 mg/kg  Rat</td>
<td>Believed to be &gt; 2,000 mg/kg  Rabbit</td>
<td>No data</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Product Animal Toxicity

**Oral LD50 value:** LD50 Believed to be > 5,000 mg/kg Rat

**Dermal LD50 value:** LD50 Believed to be > 2,000 mg/kg Rabbit

**Inhalation LC50 value:** No data

**Skin Irritation:** Contact would be expected to cause transient redness if not washed off and left on the skin for an extended period of time. Not considered to be a primary skin irritant.

**Eye Irritation:** Contact would be expected to cause transient redness if not washed out and left in the eye for an extended period of time. Not considered to be a primary eye irritant.

**Skin Sensitization:** This material is not known or reported to be a skin or respiratory sensitizer.

**Acute Toxicity:** There are no known or reported target organ effects from acute exposure.

**Subchronic / Chronic Toxicity:** Not known or reported to cause subchronic or chronic toxicity.

**Reproductive and Developmental Toxicity:** Not known or reported to cause reproductive or developmental toxicity.

**Mutagenicity:**

- **Phenol Red**
  - Not known or reported to be mutagenic.
  - This product was determined to be mutagenic in the Ames assay. It was also tested in the EPA Genetox program using the Bacillus subtilis rec-assay (bacterial DNA repair). The results of this assay were inconclusive.

- **Sodium hydroxide**
  - Not known or reported to be mutagenic based on a battery of assays.

**Carcinogenicity:**

- **Sodium hydroxide**
  - This product is not known or reported to be carcinogenic by any reference source including IARC, OSHA, NTP or EPA.

**Overview:** No data for product. Individual constituents are as follows:

**HTH® OTO TEST KIT**
Ecological Toxicity Values for: Sodium hydroxide

- Mosquito fish - 96 h LC50 = 125 mg/l
- Bluegill - 48 h LC50 = 99 mg/l

13. DISPOSAL CONSIDERATIONS

CARE MUST BE TAKEN TO PREVENT ENVIRONMENTAL CONTAMINATION FROM THE USE OF THE MATERIAL. THE USER OF THE MATERIAL HAS THE RESPONSIBILITY TO DISPOSE OF UNUSED MATERIAL, RESIDUES AND CONTAINERS IN COMPLIANCE WITH ALL RELEVANT LOCAL, STATE AND FEDERAL LAWS AND REGULATIONS REGARDING TREATMENT, STORAGE AND DISPOSAL FOR HAZARDOUS AND NONHAZARDOUS WASTES.

Waste Disposal Summary: If this product becomes a waste, it DOES NOT meet the criteria of a hazardous waste as defined under 40 CFR 261, in that it does not exhibit the characteristics of hazardous waste of Subpart C, nor is it listed as a hazardous waste under Subpart D.

Disposal Methods: As a nonhazardous waste, it should be disposed of in accordance with local, state and federal regulations.

Potential US EPA Waste Codes: Not applicable

14. TRANSPORT INFORMATION

Land (US DOT): NOT REGULATED AS A HAZARDOUS MATERIAL
Water (IMDG): NOT REGULATED AS A HAZARDOUS MATERIAL,

Flash Point: Not applicable

Air (IATA): NOT REGULATED AS A HAZARDOUS MATERIAL,
Emergency Response Guide Number: Not applicable
## 15. REGULATORY INFORMATION

**UNITED STATES:**

### Toxic Substances Control Act (TSCA):
- The components of this product are listed on the TSCA Inventory of Existing Chemical Substances.

### EPA Pesticide Registration Number:
- None established

### FIFRA Listing of Pesticide Chemicals (40 CFR 180):
- Not registered in the US under FIFRA.

### Superfund Amendments and Reauthorization Act (SARA) Title III:

#### Hazard Categories Sections 311 / 312 (40 CFR 370.2):
- **Health:** None
- **Physical:** None

### Emergency Planning & Community Right to Know (40 CFR 355, App. A):

#### Extremely Hazardous Substance Section 302 - Threshold Planning Quantity:
- **SARA III**
  - Threshold Planning Quantity:
  - None established

#### Reportable Quantity (49 CFR 172.101, Appendix):
- **CERCLA**
  - Reportable quantity:
  - SODIUM HYDROXIDE
  - Value: 1,000lbs
- **SARA III**
  - Reportable quantity:
  - None established

### Supplier Notification Requirements (40 CFR 372.45), 313 Reportable Components

- **SARA III**
  - De minimis concentration:
  - None established

### Clean Air Act Toxic ARP Section 112r:
- **CAA 112R**
  - None established

### Clean Air Act Socmi:
- **HON SOC**
  - None established

### Clean Air Act VOC Section 111:
- **CAA 111**
  - None established
Clean Air Act Haz. Air Pollutants Section 112:
CAA None established
CAA 112I None established
CAA AP None established

State Right-to-Know Regulations Status of Ingredients
Pennsylvania:

<table>
<thead>
<tr>
<th>CAS #</th>
<th>COMPONENT NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1310-73-2</td>
<td>SODIUM HYDROXIDE</td>
</tr>
</tbody>
</table>

US. Pennsylvania Worker and Community Right-to-Know Law (34 Pa. Code Chap. 301-323)
PENN RTK
08 1989
Hazard Designation:
SODIUM HYDROXIDE (NA(OH))

New Jersey:

<table>
<thead>
<tr>
<th>CAS #</th>
<th>COMPONENT NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>None established</td>
</tr>
</tbody>
</table>

Massachusetts:

<table>
<thead>
<tr>
<th>CAS #</th>
<th>COMPONENT NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1310-73-2</td>
<td>SODIUM HYDROXIDE</td>
</tr>
</tbody>
</table>

US. Massachusetts Commonwealth's Right-to-Know Law (Appendix A to 105 Code of Massachusetts Regulations Section 670.000)
MASS RTK
04 1993
SODIUM HYDROXIDE

California Proposition 65:
US CA CRT    None established

US CA65CRT   None established

**WHMIS Hazard Classification:**

WHMIS  
WHMIS  
01 1988  
Threshold limits: 1%  
English List no. 1442  
SODIUM HYDROXIDE

---

**16. OTHER INFORMATION**

<table>
<thead>
<tr>
<th>MSDS REVISION STATUS :</th>
<th>Revised to meet the ANSI standard of 16 sections</th>
</tr>
</thead>
<tbody>
<tr>
<td>SECTIONS REVISED:</td>
<td>4</td>
</tr>
<tr>
<td>Major References :</td>
<td>Available upon request.</td>
</tr>
</tbody>
</table>

THIS MATERIAL SAFETY DATA SHEET (MSDS) HAS BEEN PREPARED IN COMPLIANCE WITH THE FEDERAL OSHA HAZARD COMMUNICATION STANDARD, 29 CFR 1910.1200. THE INFORMATION IN THIS MSDS SHOULD BE PROVIDED TO ALL WHO WILL USE, HANDLE, STORE, TRANSPORT, OR OTHERWISE BE EXPOSED TO THIS PRODUCT. THIS INFORMATION HAS BEEN PREPARED FOR THE GUIDANCE OF PLANT ENGINEERING, OPERATIONS AND MANAGEMENT AND FOR PERSONS WORKING WITH OR HANDLING THIS PRODUCT. ARCH CHEMICALS BELIEVES THIS INFORMATION TO BE RELIABLE AND UP TO DATE AS OF THE DATE OF PUBLICATION BUT, MAKES NO WARRANTY THAT IT IS. ADDITIONALLY, IF THIS MSDS IS MORE THAN THREE YEARS OLD, YOU SHOULD CONTACT ARCH CHEMICALS MSDS CONTROL AT THE PHONE NUMBER ON THE FRONT PAGE TO MAKE CERTAIN THAT THIS DOCUMENT IS CURRENT.