

# MATERIAL SAFETY DATA SHEET



Iodine Solution / 9th version (USA), January 30, 2012

## 1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND COMPANY

**Component Name:** Lugol's Iodine

**Applicable Product(s):** AR163 // Lugol's Iodine // Artisan™ Elastic Stain Kit  
AR175 // Lugol's Iodine // Artisan™ Gram Stain Kit  
AR306 // Lugol's Iodine // Artisan™ Gram Yellow Stain Kit

**Company Identification:** Dako North America, Inc., 6392 Via Real, Carpinteria, California, 93013, United States.  
Tel. +805/566-6655, FAX +805/566-6688

**24-Hour Emergency Contact:** CHEMTREC +800/424-9300 (U.S.A. and Canada only)  
+703/527-3887 (all other countries)

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

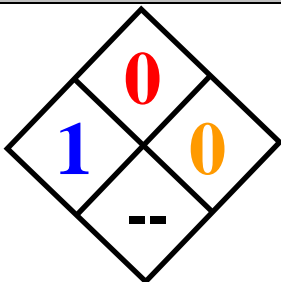
% / Chemical Name:	CAS# / EINECS#:	Hazard Classification:
1-5 / Potassium iodide	7681-11-0 / 231-659-4	Xn: R42/43
1-5 / Iodine	7553-56-2 / 231-442-4	Xn: R20/21 N: R50
>1 / Water	7732-18-5 / 231-791-2	None Identified

NOTE: The Hazard Classification listed in this section refers to the chemical at a pure concentration. It has been determined that the remaining ingredient(s) of this component/product are NOT CLASSIFIED AS HAZARDOUS CHEMICALS due to their physical and/or chemical nature and/or concentration in solution, in accordance with California and Federal OSHA regulations (Federal Register 29CFR 1910.1200), and The Chemicals (Hazard Information and Packaging for Supply) Regulations (European Community).

## 3. HAZARDS IDENTIFICATION

<b>Physical and Chemical Hazards:</b>	None identified.
<b>Skin Contact:</b>	Causes discoloration. May cause smarting, tingling, redness, inflammation or allergic reaction.
<b>Eye Contact:</b>	May cause stinging or burning sensation, watering, redness or inflammation of eyelids.
<b>Inhalation:</b>	May cause spasm and edema of larynx and bronchi, irritation of mucous membranes, watery eyes, headache, coughing, salivation or nausea.
<b>Ingestion:</b>	May cause irritation of lips, mouth and throat, salivation, intense thirst, abdominal cramps, diarrhea, vomiting or discoloration of oral mucosa.
<b>Environment:</b>	None identified.

## 4. NATIONAL FIRE PROTECTION AGENCY (NFPA) RATING



**Fire Hazard / Flash Points:** Non-Flammable

**Health Hazard:** Slightly Hazardous

**Reactivity:** Normally Stable

**Specific Hazard:** None identified

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## 5. EMERGENCY FIRST-AID MEASURES

- Skin:** Remove victim to nearest source of water. Remove contaminated clothing, blot excess chemical from skin and wash affected area under lukewarm water using a mild soap. Rinse for at least 20 minutes and blot dry. Seek immediate medical attention.
- Eye:** Remove victim to nearest source of water, blot excess chemical from face and gently rinse affected eye(s) with clean, lukewarm water for at least 20 minutes. In order to cleanse as much of the eye as possible, be sure to wash under eyelids. If worn, have victim remove contacts. Seek medical attention. If eyes are painful or sensitive to light, protect with a clean, loosely tied handkerchief or towel. Maintain physical and verbal contact with victim.
- Inhalation:** Remove victim to well-ventilated area. Seek medical attention. If conscious but coughing or short of breath, loosen tight fitting clothing, have victim lie down and keep warm and calm. Oxygen may be given. If simply overwhelmed, loosen tight clothing, lie victim down, monitor pulse and keep warm and calm.
- Ingestion:** Remove victim to well-ventilated area. Seek immediate medical attention. If face is blue or breathing is labored, lay victim on back, open and clear airway and give oxygen. Keep victim warm and calm. If unconscious, lay victim on side, loosen tight clothing and monitor vital signs. If conscious, give water and have victim rinse mouth. If vomiting, have victim sitting up and leaning forward.

## 6. FIRE-FIGHTING MEASURES

- Flash Point / Explosion Information:** N/A (Non-flammable) / LEL: N/A UEL: N/A
- Precautions During Fire:** Avoid inhalation of toxic fumes. If possible, safely move container away from fire area.
- Suitable Extinguishing Media:** No restrictions. Use media appropriate to surrounding area.
- Special Exposure Hazards:** Combustion or decomposition of material may produce hazardous and/or irritating fumes. Hazardous polymerization will not occur.
- Special Protective Equipment for Firefighters:** Wear self-contained breathing apparatus and protective clothing to prevent contact with eyes and skin.

## 7. ACCIDENTAL RELEASE MEASURES

- Personal Precautions:** Personal protective equipment and clothing is recommended during all cleanup procedures. Eliminate all ignition sources, stop or control leak. Refer to Section 8 for additional information on exposure controls and personal protective equipment.
- Environmental Precautions:** Do not allow into any body of water. Check with local and State regulations before discharging into sewers or public landfills.
- Methods for Cleanup:** Avoid physical contact during removal. An approved respirator is recommended when irritant or nuisance vapors are produced. Absorb on earth, sand or vermiculite, and place in a closed container and hold for waste disposal. Absorbent pads or paper towels may be used for small spills of less than 1 liter. Ventilate area and wash spill site after material pickup is complete. Refer to Section 13 for complete disposal information.

## 8. HANDLING AND STORAGE

Keep containers tightly closed. Store in a cool, dry and well-ventilated location at room temperature. Store separately from acids, bases and reducing agents. Keep out of reach of children.

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## 9. EXPOSURE CONTROLS / PERSONAL PROTECTION

**Permissible Exposure Limit (OSHA TWA/TLV/STEL):** Potassium iodide: None identified.  
Iodine: 0.1 ppm (TWA).

**Precautionary Measures During Use:** Avoid physical contact and prolonged or repeated exposures. A chemical fume hood is highly recommended. Do not breathe vapors if produced. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. Mechanical exhaust is required.

**Inhalation:** Respiratory protection is highly recommended if irritating vapors are produced during routine usage of this product. Though it is not likely, if TWA or other exposure limits are exceeded during the usage of this material, attempt to reduce exposure levels to within an acceptable range. If this is not possible, use a NIOSH/MSHA-Approved respirator. Follow NIOSH/MSHA and equipment manufacturer's recommendations to determine appropriate equipment choice. Chemicals without established limits must also be considered when determining respiratory protection protocols.

**Skin:** Use chemically resistant gloves (e.g. nitrile), lab coat with sleeves or rubber apron. Be aware that over time, the liquid may penetrate the gloves. Frequent change is advisable. Some glove types may not be compatible for use with this component. Other types of gloves can be recommended by the glove supplier.

**Eye:** Splash-proof chemical safety goggles or face shield.

**Other:** Eye wash or safety shower.

**Environmental Exposure Controls:** Not available.

## 10. PHYSICAL AND CHEMICAL PROPERTIES

**Appearance:** Dark reddish brown liquid

**Odor:** Pungent

**pH (as supplied):** N/A

**Boiling Point/Boiling Range:** N/A

**Melting Point/Melting Range:** N/A

**Flammability (liquid):** NON-FLAMMABLE

**% Volatiles by Volume:** N/A

**Autoflammability:** N/A

**Oxidizing Properties:** N/A

**Vapor Pressure (kPa):** N/A

**Relative Density (gm/mL @ 20°C):** ~1.0

**Water Solubility:** N/A

**Alcohol or Glycerol Solubility:** N/A

**Evaporation Rate:** N/A

## 11. STABILITY AND REACTIVITY

**Stability:** Stable when used appropriately.

**Conditions to Avoid:** Exposure to direct light.

**Materials to Avoid:** Alkaloid salts, Chloral hydrate, Tartaric and other acids, Calomel, Potassium chlorate and metallic salts. Mixing iodine, Antimony and Ammonia results in an explosion. A violent reaction occurs between iodine and Acetaldehyde.

**Hazardous Decomposition Products:** Iodine.

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## 12. TOXICOLOGICAL INFORMATION (dangerous-to-health effects)

Potassium iodide: **Suspected Mutagen, Teratogen.** No LD<sub>50</sub> / LC<sub>50</sub> information available in relation to normal routes of occupational exposure. Target organ(s): Thyroid.

NOTE: Prolonged exposure to iodides may produce iodism in sensitive individuals. Symptoms of exposure include skin rash, running nose, headache and irritation of the mucous membranes. For severe cases of exposure, the skin may show pimples, boils, hives, blisters and bruises. Iodides are readily diffused across the placenta. Neonatal deaths from respiratory distress secondary to goiter have been reported. Iodides have been known to cause drug-induced fevers, which are usually of short duration.

Iodine: **Corrosive. Dangerous for the Environment.** Orl-rat LD<sub>50</sub> = 14 gm/kg.  
Target organ(s): Thyroid, Kidneys, Endocrine System.

**NOTE:** To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated at product concentrations.

## 13. ECOLOGICAL INFORMATION

**Mobility:** This product/component is miscible in water. May spread in water systems.

**Degradability:** No information available.

**Accumulation:** No information available.

**Ecotoxicity:** The product contains a small amount of a substance which is very toxic to aquatic organisms.

**Other Hazardous Effects:** None identified.

## 14. DISPOSAL CONSIDERATIONS

**Waste Management Information (Disposal):** When disposing of the unused contents, the preferred options are to send to a licensed reclaimer, or permitted incinerators. Any disposal practice must be in compliance with local, State, and Federal laws and regulations. Check with local and State regulations before discharging into sewers or public landfills. Do not dump into any body of water.

## 15. TRANSPORT INFORMATION

**IATA Classification:** NOT RESTRICTED. When shipped alone or with other non-hazardous materials, the text "NOT RESTRICTED" should be included in the description on the Air Waybill to indicate that this mixture is not subject to IATA regulations, and has been checked. (4.1.3.3 / IATA *Dangerous Goods Regulations* 2003).

**Proper Shipping Name:** N/A

**Hazard Class#:** N/A

**ADR/RID:** N/A

**Packing Group# / PI#:** N/A

**UN#:** N/A

## 16. REGULATORY INFORMATION / LABELING

**Contains:** 1-5% Potassium iodide

**R-and S-phrases:**

R43 : May cause sensitization by skin contact.

S60 : This material and/or its container must be disposed of as hazardous waste.

**Hazard symbol(s):**



**Irritant (Xi)**

## 16. REGULATORY INFORMATION / LABELING (con't)

**Restrictions on Use:** The product is for laboratory use only. The product must not be handled by persons under 18 years of age.

**Training Provisions:** The product should be handled only by technically qualified individuals experienced in handling potentially hazardous chemicals. The content of this Material Safety Data Sheet should also be known before use.

**OSHA Status:** In accordance with the OSHA Hazard Communication Standard, at product concentrations, the chemical components listed on this Material Safety Data Sheet are classified as hazardous.

**Toxic Substances Control Act (TSCA):** This product complies with all TSCA inventory requirements.

**California Proposition 65:** The following statement is made in order to comply with the California State Drinking Water and Toxic Enforcement Act of 1986. **This product does NOT contain chemicals on California's listing of known or suspected carcinogens.**

**Applicable Compliance Standards:** This Material Safety Data Sheet is in compliance with the Federal Occupational Safety and Health Administration's Hazard Communication Standard [29 CFR 1910.1200 ET. SEQ.], and The Chemicals (Hazard Information and Packaging for Supply) Regulations 1994 (European Community).

## 17. OTHER INFORMATION

### Wording of Risk Phrases:

R20/21 Harmful by inhalation and in contact with skin.  
R42/43 May cause sensitization by inhalation and skin contact.  
R50 Very toxic to aquatic organisms.

**User Note:** The information in this Material Safety Data Sheet was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, express or implied, regarding its accuracy or correctness. Although certain hazards are described herein, we cannot state that these are the only hazards which exist. Final determination of suitability and safe usage of this product is the sole responsibility of the user who is obligated to review this data in the specific context of the intended use and determine applicability.

**Use of Abbreviations:** The terms "Not Available" and "Not Relevant" shall be designated by the text "N/A" for "Not Available" and "N/R" for "Not Relevant".

**Trade Secret Provision and Chemical Concentration Disclosure:** In accordance with OSHA and European Union regulations (20 CFR 1910.1200i and 1999/45/EC), specific chemical identities may be withheld provided all required provisions of the regulation are met. Chemical concentrations may be disclosed as either a specific value or range, provided the range given is applicable to the hazards as identified by the MSDS.

**Hazard Symbol Key:** C: Corrosive / E: Explosive / F: Highly Flammable / F+: Extremely Flammable / N: Dangerous for the Environment / O: Oxidizing / T: Toxic / T+: Very Toxic / Xi: Irritant / Xn: Harmful

**Sources of Key Data:** Material Safety Data Sheets from suppliers, the Sigma-Aldrich Library of Chemical Safety, Merck Index, Sax's Dangerous Properties of Industrial Materials, American Conference of Government Industrial Hygienists – 2002, and North American Emergency Response Guidebook. The Chemicals (Hazard Information and Packaging for Supply) Regulations 2002. No. 1689. Commission Directive 91/155/EEC as amended by Commission Directive 2001/58/EC (Safety Data Sheets) in accordance with Parliament and Council Directive 1999/45/EC and Council Directive 67/548/EEC. Additional chemical information and hazard classification data provided by the Danish Toxicology Centre.

**Revision date:** January 30, 2012

Replaces 8th version of November 15, 2011. This MSDS has been specifically updated to reflect current product formulations and hazard information. All MSDS's generated before the revision date should be discarded.