

# SAFETY DATA SHEET

## 1. Identification

**Name of the product:** AU-1 Gold Etch  
**Recommended use:** Gold etchant  
**Producer:** Union Etchants International, Inc.  
8-10 Green Street, Bldg A  
Woburn MA 01801 USA

**Telephone No.:** 1-781-935-8878  
**Emergency No. 24-Hour (Chemtrec):** 1-800-424-9300

## 2. Hazard(s) Identification

**Classification:** Eye (Category 2A) and skin irritant (Category 3):  
Corrosive to metals.



**Labeling:**

**GHS Symbol:** Exclamation mark



**Signal word:** WARNING

**Hazard statement:**  
Causes eye and skin irritation.

**Precautionary statements:**  
Avoid contact with eyes and skin.  
Do not ingest.  
Do not breathe vapors or mists.  
Keep container tightly close.  
Store in cool well ventilated place, away from sunlight.  
Wear protective gloves and eye protection.

## 3. Composition / Information on ingredients

**Chemical Identity: Component A >80% by weight**  
**Common name:** Water  
**Numbers of Identity:** CAS No. 7732-18-5

**Chemical Identity: Component B <10% by weight**  
**Common name:** Potassium iodide  
**Numbers of Identity:** CAS No. 7681-11-0  
**Chemical Identity: Component C <5% by weight**

**Common name:** Iodine

**Numbers of Identity:** CAS No. 7553-56-2

#### **4. First-aid measures**

**Eyes contact:**

Hold eye open and rinse slowly and gently with water for 15-20 minutes.

Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. If symptoms occur, get immediate medical attention.

**Skin contact:**

Remove contaminated clothing and shoes. Wash skin with large amounts of water. If irritation occurs or persists, get medical attention. Wash contaminated clothing before reuse. Destroy contaminated shoes.

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. Get medical attention.

**Ingestion:**

Immediately rinse mouth with water. Get medical attention immediately. Do not induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person.

#### **5. Firefighting measures**

**Suitable extinguishing media:**

Foam, carbon dioxide, extinguishing powder, and water fog. In case, of fire cool endangered containers with water fog.

**Specific hazards in case of fire:**

May generate iodine vapors.

**Special protective equipment and precaution for fire fighters:**

For fires in an enclosed area, wear self-contained breathing apparatus. Do not inhale vapors.

#### **6. Accidental release measures**

**Personal precautions:**

Depending on extent of release, consider the need for fire fighters/emergency responders with adequate personal protective equipment for clean up.

Do not eat, drink or smoke while cleaning up. Wear protective clothing, safety glasses and impervious gloves (e.g. neoprene gloves). Ensure adequate ventilation. If vapors or mists are generated, respiratory protection is recommended. Consult a Specialist for recommending the appropriate respiratory protection equipment. See Section 8 for handling recommendations.

**Environmental precautions:**

Prevent spills from entering sewers or drains and contact with soil.

## Methods and materials for containment and clean up:

Dike large spills and pump into suitable container drums or absorb with noncombustible absorbent material. Shovel up and put saturated absorbent into a suitable labeled open headed drum with a tight fitting lid. Absorb small spills with noncombustible absorbent material. Secure the drum cover and move the container to a safe holding area. Check area for residual material and repeat clean up if detected. Dispose of waste materials at an appropriate waste disposal facility in accordance with applicable laws and regulations (also see Section 13).

## 7. Handling and storage

### Precautions for safe handling:

Avoid contact with eyes and skin. Do not breathe mists.

### Conditions for storage, including incompatibilities:

Store in cool, dry, well ventilated area and away from direct sunlight. Do not store near incompatible substances (see Section 10). Keep containers tightly closed. Prolonged exposure to air is not recommended due to possible degradation of the ingredients. Empty containers can be hazardous due to the presence of product residues.

## 8. Exposure controls / personal protection:

Compound (CAS No.)	Reference	TWA ppm (mg/m <sup>3</sup> )	STEL ppm (mg/ m <sup>3</sup> )
Iodine ( CAS No. 7553-56-2)	ACGIH	Not established	0.1 (1) C*
	OSHA	Not established	0.1 (1) C
Potassium iodide ( CAS No. 7681-11-0)	ACHIH	Not established	Not established
	OSHA	Not established	Not established

\* Ceiling value

See Section 16 for additional occupational exposure standards.

### Ventilation:

Use in well ventilated areas with local exhaust. General room ventilation is adequate unless the process generates mists or fumes.

### Respiratory protection:

General ventilation is usually sufficient, except if the process generates mists or vapors. If vapors or mists are generated, respiratory protection is recommended. Consult a Specialist for recommending the appropriate respiratory protection equipment.

### Eye protection:

Safety glasses with side shield or chemical goggles must be worn.

### Skin protection:

Impervious gloves (i.e. neoprene) must be worn. Consult a Specialist for recommending the appropriate gloves.

## 9. Physical and chemical properties

**Physical state:** Liquid

**Color:** Dark purple

**Odor:** None

**Odor threshold:** Not applicable

**pH value:** 3.5 - 4.0

**Melting point:** Not available

**Freezing point:** Not available

**Initial boiling point:** Not available

**Flash Point:** Not applicable

**Evaporation rate:** Not available

**Flammability (solid, gas):** Not applicable

**Explosion limits:** Not applicable

**Vapor pressure:** Not available

**Vapor density:** Not available

**Relative density:** Not available

**Solubility:** Soluble in water

**Partition coefficient:** Not available

**Auto-ignition temperature:** Not applicable

**Decomposition temperature:** Not available

## 10. Stability and reactivity

**Chemical stability:** Stable at room temperature.

**Possibility of hazardous reactions:** Reacts with ammonium hydroxide to form a highly explosive shock sensitive material.

**Conditions to avoid:** Stable at room temperature and expected use conditions.

**Materials to avoid:** Reactive metals, ammonia, strong acids and reducing agents. Acetaldehyde, dipropylmercury and acetylene can cause explosive reactions with iodine.

**Hazardous decomposition products:** When heated to decomposition may produce hydrogen iodide and other iodine compounds.

## 11. Toxicological information

**AU-1 Gold Etch Solution:** Acute Dermal Irritation/Corrosion (OECD Guideline Number 404) - The solution was a dermal irritant but not classified as corrosive.

**No other toxicological information is available for AU-1 Gold Etch Solution. Below toxicological information is presented for the individual chemical components in the product.**

### **Iodine:**

Oral LD<sub>50</sub> – human = 28 mg/kg Symptoms: hypermotility, diarrhea and other gastrointestinal changes.

Oral LD<sub>50</sub> – rabbit = 5 mg/kg Symptoms: Blood – hemolysis

Oral LD<sub>50</sub> – rabbit = 0.916 g/kg

Oral LD<sub>50</sub> – dog = 0.8 gm/kg

Oral  $LDL_0$  – mouse = 1.86 g/kg Symptoms: general depression, muscle weakness, dyspnea.

Oral  $LD_{50}$  – rat = 14 gm/kg

Oral  $LD_{50}$  – mouse = 22 gm/kg

Oral  $LD_{50}$  – mouse = 10 gm/kg Symptoms: Behavioral - changes in motor activity.

Oral  $LD_{50}$  – rabbit = 10 gm/kg

Inhalation  $LCL_0$  – human = 1mg/m<sup>3</sup> (exposure time not specified) Symptoms: muscle weakness, coma, acute pulmonary edema.

Inhalation  $LCL_0$  – rat = 137 ppm (1 hour)

Inhalation  $LCL_0$  – rat = 100 ppm (exposure time not specified) Symptoms: lacrimation, respiratory depression, body temperature decrease.

Subcutaneous  $LD_{50}$  – rat = 10.5 gm/kg

Subcutaneous  $LD_{50}$  – mouse = 8.65 gm/kg

Intravenous  $LDL_0$  – rabbit = 10 gm/kg

Intravenous  $LDL_0$  – rat = 167 mg/kg Symptoms: convulsions or effects on seizure threshold.

#### Reproduction Studies:

Oral reproduction studies, in laboratory animals, dosed with iodine caused effects on the viability and growth of the newborn.

Clinical use of iodine in pregnant women can cause effects on the fetus and it can be distributed into mother's milk and affect the nursing infant.

#### **Potassium iodide:**

Oral  $LDL_0$  – mouse = 1.86 g/kg. Symptoms – muscle weakness, general depressed activity.

Oral  $LDL_0$  – rabbit = 0.916 g/kg.

#### Reproduction Studies:

Oral reproduction studies, in laboratory animals, dosed with potassium iodide caused effects on the viability and growth of the fetuses and newborn.

Clinical use of potassium iodide in pregnant women has shown that this compound can cause effects on the fetus and it can be distributed into mother's milk and affect the nursing infant.

## 12. Ecological information

**Persistence and degradability:** The ingredients in this product are not biodegradable.

**Bio-accumulative potential:** Iodine can bio-accumulate in aquatic plants and animals.

**Mobility:** Iodine and iodide compounds are very mobile in the environment. They can readily transfer from soil to plant to animal.

### 13. Disposal considerations

#### **Waste disposal:**

The product is suitable for processing at an appropriate government approved waste facility. Disposal should only be carried out in accordance with applicable laws and regulations.

### 14. Transportation information

**DOT class:** Corrosive Liquid N.O.S. (Potassium Iodide Solution) Class 8 PG III [UN1760]

**IATA:** Corrosive Liquid N.O.S. (Potassium Iodide Solution) Class 8 PG III [UN1760]

### 15. Regulatory information

All components are on the TSCA inventory.

### 16. Other information

#### **National Fire Prevention Association (NFPA) Rating**

**Health: 1**

**Flammability: 0**

**Reactivity: 0**

**Special: 0**

#### **Iodine: Occupational Exposure Standard**

OEL-ARAB Republic of Egypt: TWA 0.1 ppm (0.1 mg/m<sup>3</sup>), JAN1993

OEL-AUSTRALIA: TWA 0.1 ppm (1 mg/m<sup>3</sup>), JAN1993

OEL-BELGIUM: STEL 0.1 ppm (1 mg/m<sup>3</sup>), JAN1993

OEL-FINLAND: STEL 0.1 ppm (1 mg/m<sup>3</sup>), Skin, JAN1999

OEL-FRANCE: VLE 0.1 ppm (1 mg/m<sup>3</sup>), JAN1999

OEL-THE NETHERLANDS: MAC-C 1 mg/m<sup>3</sup>, 2003

OEL-NORWAY: TWA 0.1 ppm (1 mg/m<sup>3</sup>), JAN1999

OEL-JAPAN: OEL 0.1 ppm (1 mg/m<sup>3</sup>), MAY2006

OEL-THE PHILIPPINES: TWA 0.1 ppm (1 mg/m<sup>3</sup>), JAN1993

OEL-POLAND: MAC(TWA) 1 mg/m<sup>3</sup>, JAN1999

OEL-RUSSIA: STEL 1 mg/m<sup>3</sup>, Skin, JUN2003

OEL-SWEDEN: CEILING 0.1 ppm (1 mg/m<sup>3</sup>), JAN1999

OEL-SWITZERLAND: MAK-W 0.1 ppm (1 mg/m<sup>3</sup>), KZG-W 0.2 ppm, JAN1999

OEL-THAILAND: TWA 0.1 ppm (1 mg/m<sup>3</sup>), JAN1993

OEL-TURKEY: TWA 0.1 ppm (1 mg/m<sup>3</sup>), JAN1993

OEL IN ARGENTINA, BULGARIA, COLOMBIA, JORDAN check ACGIH TLV;

OEL IN SINGAPORE, VIETNAM check ACGIH TLV

OEL-DENMARK: CL 0.1 ppm (1 mg/m<sup>3</sup>), OCT 2002

OEL-MEXICO: peak 0.1 ppm (1 mg/m<sup>3</sup>), 2004

OEL-UNITED KINGDOM: STEL 0.1 ppm (1.1 mg/m<sup>3</sup>), 2005

OEL-KOREA: CL 0.1 ppm (1 mg/m<sup>3</sup>), 2006

OEL-NEW ZEALAND: CL 0.1 ppm (1 mg/m<sup>3</sup>), JAN2002

#### **Potassium Iodide: Occupational Exposure Standards**

OEL-RUSSIA: STEL 3 mg/m<sup>3</sup>, JUN2003

**SDS Preparation date:** August 11, 2008

**Revision indicator: Version:** 3