

**SDS 1**  
**Safety Data Sheet**

**Section 1 Product and Company Information**

**Product Name:** First Reagent      **Product Number:** 481196-D  
**Recommended use:** Used to detect arsenic in water  
**Restricted use:** Not applicable  
**Mfg. name:** Industrial Test Systems, Inc.  
**Mfg. address:** 1875 Langston Street, Rock Hill, SC  
**Emergency Telephone (poison control):** 1-800-222-1222  
**Mfg. Telephone:** 1-803-329-9712

**Section 2 Hazard Identification**

**Hazard(s):** Not hazardous: food grade tartaric acid, less than 1% of other ingredients.  
**Required labeling:** Not applicable

**Section 3 Composition/Information on Ingredients**

Reagent	CAS	TSCA#	RTECS#	%	Hazard
L-Tartaric Acid	87-69-4	N/A	N/A	98.9	Food grade, N/A

**Section 4 First-Aid Measures**

Contact Area	First-aid
Eyes	Flush with large amounts of cold water for 15 minutes. Call a physician immediately.
Skin	Rinse with large amounts of water for 15 minutes. Remove contaminated clothing.
Ingestion	If swallowed, wash out mouth with water. Do not induce vomiting. Call a physician.
Inhalation	If inhaled, remove person to fresh air source. Call a physician.
Most likely effect	Irritation of skin and nose.

**Section 5 Fire Fighting Measures**

**Extinguishing media:** Use that which is appropriate for the surrounding fire.  
**Explosion Hazard:** Not flammable or combustible.  
**Flash Point:** N/A      **Special fire fighting procedures:** N/A

**Section 6 Accidental Release Measures**

Sweep up and dispose in normal trash. Do not breathe dust. Wash hands.

**Section 7 Handling and Storage**

Use standard hygienic practices (no eating, drinking, or smoking) around the product. Wash hands after use. Keep away from children and pets. Keep container tightly closed. Use in well ventilated area. Handle carefully to limit dust.

**Section 8 Exposures Controls/Personal Protection**

**OSHA Permissible Limits:** No data  
**Engineering controls:** Adequate ventilation. Use dust mask if there is a large spill.  
**Personal Protective Equipment (PPE):** Use PPE appropriate for the surroundings.  
**Other:** Use gloves to prevent contact irritation. Use eye protection to prevent droplets from entering the eye. Ensure an eyewash station is available.

**Section 9 Physical and Chemical Properties**

**Appearance:** White, granular free-flowing solid    **Melting/Freezing point:** N/A  
**Decomposition temperature:** No data    **Upper/Lower flammability limit:** No data  
**Solubility:** Water soluble    **Viscosity:** N/A    **Odor:** odorless  
**Initial boiling point/range:** N/A    **Vapor Pressure:** Not volatile  
**Flash point:** No data    **Odor threshold:** N/A    **Evaporation rate:** N/A  
**Vapor density:** N/A    **Flammability:** flammable    **pH:** Acidic  
**Partition coefficient:** N/A    **Relative density:** No data  
**Auto-ignition temperature:** No data

**Section 10 Stability and Reactivity**

Product is stable under normal conditions. Hazardous polymerization will not occur. Reacts with zinc, silver, and/or aluminum in the presence of water or moisture to rapidly release explosive hydrogen gas.

**Section 11 Toxicological Information**

No data. Do not breathe dust.

**Section 12 Ecological Information**

Data not available.

**Section 13 Disposal Considerations**

Dispose in normal trash. Do not breathe dust. At no time should First Reagent, Second Reagent, and Third Reagent be mixed together in dry (powder) form!

**Section 14 Transport Considerations**

Not applicable - material is not hazardous

**Section 15 Regulatory Information**

The above information is believed to be correct but does not purport to be all-inclusive and shall be used ONLY as a guide. Keep away from children and pets. Store in a dry, cool place. Keep container tightly closed.

**Section 16 Other Information**

**Preparer:** H. R.  
**Date Prepared:** 5-3-17  
**Supersedes Revision:** 10-10-16  
**Disclaimer:** The information in this Safety Data Sheet is accurate to the best of our knowledge. It is designed only as a guidance for safe use, handling, storage, and disposal. This information is not considered to be a warranty or a quality specification.

**SDS 1**  
**Safety Data Sheet**

**Section 1 Product and Company Information**

**Product Name:** Second Reagent      **Product Number:** 481196-E  
**Recommended use:** Used to detect arsenic in water  
**Restricted use:** Not applicable  
**Mfg. name:** Industrial Test Systems, Inc.  
**Mfg. address:** 1875 Langston Street, Rock Hill, SC  
**Emergency Telephone (poison control):** 1-800-222-1222  
**Mfg. Telephone:** 1-803-329-9712

**Section 2 Hazard Identification**

**Hazard(s):** DANGER: CORROSIVE: Causes skin and eye damage. May be fatal if swallowed. Irritation to nose and throat.

**Required labeling:** N/A

**Section 3 Composition/Information on Ingredients**

Reagent	CAS	TSCA#	RTECS#	%	Hazard
Potassium Peroxymonosulfate	10058-23-8	N/A	N/A	43	N/A
Potassium Bisulfate	7646-93-7	N/A	N/A	23	N/A
Potassium Sulfate	7778-80-5	N/A	N/A	29	N/A
Potassium Peroxydisulfate	7727-21-1	N/A	N/A	3	N/A
Magnesium Carbonate	546-93-0	N/A	N/A	2	N/A

**Section 4 First-Aid Measures**

Contact Area	First-aid
Eyes	Flush with large amounts of cold water for 15 minutes.
Skin	Rinse with large amounts of water for 15 minutes. Remove contaminated clothing.
Ingestion	If swallowed, do not induce vomiting. Drink 1-2 glasses of water to dilute the stomach contents. Do not give water to the victim if they are unconscious. Call a physician immediately.
Inhalation	If inhaled, remove person to fresh air source. If breathing is still difficult, have a trained person administer oxygen. If not breathing, give artificial respiration. Call a physician immediately.

**Most likely effect** Irritation

**Section 5 Fire Fighting Measures**

**Extinguishing media:** Water    **Explosion Hazard:** Not flammable or combustible. Will release oxygen when heated, acidic mist may be present    **Flash Point:** N/A  
**Special fire fighting procedures:** N/A

**Section 6 Accidental Release Measures**

Sweep up and dispose in normal trash. Do not breathe dust. Wash hands.

**Section 7 Handling and Storage**

Use standard hygienic practices (no eating, drinking, or smoking) around the product. Wash hands after use. Keep away from children and pets. Keep container tightly closed. Mixing with compounds containing halides or active halogens can cause release of the respective halogen in the presence of moisture. Mixing with cyanides can cause release of hydrogen gas. Mixing with heavy metal salts such as those of cobalt, nickel, copper, or manganese can cause decomposition with release of oxygen and heat.

**Section 8 Exposures Controls/Personal Protection**

**OSHA Permissible Limits:** No data    **Engineering controls:** Adequate ventilation. Use dust mask if there is a large spill.    **Personal Protective Equipment (PPE):** Use PPE appropriate for the surroundings.    **Other:** Use gloves to prevent contact irritation. Use eye protection to prevent droplets from entering the eye. Ensure an eyewash station is available.

**Section 9 Physical and Chemical Properties**

**Appearance:** White, granular free-flowing solid    **Melting/Freezing point:** N/A  
**Decomposition temperature:** No data    **Upper/Lower flammability limit:** No data  
**Solubility:** N/A    **Viscosity:** N/A    **Odor:** odorless    **Initial boiling point/range:** N/A  
**Vapor Pressure:** Not volatile    **Flash point:** No data    **Odor threshold:** N/A  
**Evaporation rate:** N/A    **Vapor density:** N/A    **Flammability:** flammable  
**pH:** 2.3 (1% in water)    **Partition coefficient:** N/A    **Relative density:** 1.1 – 1.4  
**Auto-ignition temperature:** No data

**Section 10 Stability and Reactivity**

Product is stable under normal conditions. Hazardous polymerization will not occur. Reacts with zinc, silver, and/or aluminum in the presence of water or moisture to rapidly release explosive hydrogen gas.

**Section 11 Toxicological Information**

Acute Effects:

- Skin Absorption: >11,000 mg/kg (rabbits)
- Oral LD<sub>50</sub>: 2,000 mg/kg (rats)
- Inhalation LC<sub>50</sub>: >5 mg/L (rats) (4 hour)

**Section 12 Ecological Information**

Data not available.

**Section 13 Disposal Considerations**

Dispose in normal trash. Do not breathe dust. At no time should First Reagent, Second Reagent, and Third Reagent be mixed together in dry (powder) form!

**Section 14 Transport Considerations**

Not applicable - material is not hazardous

**Section 15 Regulatory Information**

The above information is believed to be correct but does not purport to be all-inclusive and shall be used ONLY as a guide. Keep away from children and pets. Store in a dry, cool place. Keep container tightly closed.

**Section 16 Other Information**

**Preparer:** H. R.    **Date Prepared:** 5-3-17    **Supersedes Revision:** 12-16-15  
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**SDS 1**  
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**Section 1 Product and Company Information**

**Product Name:** Third Reagent **Product Number:** 481196-E  
**Recommended use:** Used to detect arsenic in water  
**Restricted use:** Not applicable  
**Mfg. name:** Industrial Test Systems, Inc.  
**Mfg. address:** 1875 Langston Street, Rock Hill, SC  
**Emergency Telephone (poison control):** 1-800-222-1222  
**Mfg. Telephone:** 1-803-329-9712

**Section 2 Hazard Identification**

**Hazard(s):** TOXIC: May be fatal if swallowed. **IRRITANT:** Irritation to nose and throat.  
**Required labeling:** Not applicable

**Section 3 Composition/Information on Ingredients**

Reagent	CAS	TSCA#	RTCS#	%	Hazard
Zinc	7440-66-6	N/A	N/A	>99	Toxic, Irritant

**Section 4 First-Aid Measures**

**Contact Area** **First-aid**  
**Eyes** Flush with large amounts of cold water for 15 minutes. Call a physician immediately.  
**Skin** Wash with soap and water for 15 minutes. Remove contaminated clothing.  
**Ingestion** If swallowed, wash out mouth with water. If a large amount is swallowed, call a physician.  
**Inhalation** Antidote: Calcium disodium edetate/dextrose, intravenous; Calcium disodium edetate/procaine, intramuscular  
If inhaled, remove person to fresh air source. Call a physician.  
**Most likely effect** Irritation of skin and nose.

**Section 5 Fire Fighting Measures**

**Extinguishing media:** Dry chemical, sand, lime, soda ash.  
**Explosion Hazard:** Very fine dust may form explosive mixtures with air.  
**Flash Point:** N/A **Special fire fighting procedures:** Do not use water or foam

**Section 6 Accidental Release Measures**

Do not touch spilled material. Avoid heat, flames, sparks, and other sources of ignition. Remove sources of ignition. Collect material into suitable, loosely covered container for disposal. Do not get water directly on material.

**Section 7 Handling and Storage**

Use standard hygienic practices (no eating, drinking, or smoking) around the product. Wash hands after use. Keep away from children and pets. Keep container tightly closed. Use in well ventilated area. Handle carefully to limit dust. Store in a cool, dry place.

**Section 8 Exposures Controls/Personal Protection**

**OSHA Permissible Limits:** N/A  
**Engineering controls:** Adequate ventilation. Use dust mask if there is a large spill.  
**Personal Protective Equipment (PPE):** Use PPE appropriate for the surroundings.  
**Other:** Use gloves to prevent contact irritation. Use eye protection to prevent droplets from entering the eye. Ensure an eyewash station is available.

**Section 9 Physical and Chemical Properties**

**Appearance:** Grayish, powdery solid **Melting/Freezing point:** 420°C/N/A  
**Decomposition temperature:** No data **Upper/Lower flammability limit:** No data  
**Solubility:** reacts **Viscosity:** N/A **Odor:** odorless  
**Initial boiling point/range:** N/A **Vapor Pressure:** 1mmHg @ 487°C  
**Flash point:** No data **Odor threshold:** N/A **Evaporation rate:** N/A  
**Vapor density:** N/A **Flammability:** flammable **pH:** N/A  
**Partition coefficient:** N/A **Relative density:** 7.14  
**Auto-ignition temperature:** No data

**Section 10 Stability and Reactivity**

Product is stable under normal conditions. Hazardous polymerization will not occur. Finely divided powder may react with water. Keep away from acids, bases, metals, oxidizers, reducing agents, combustible materials.

**Section 11 Toxicological Information**

**Eye Contact:** Dust may cause mechanical irritation or injury to the surface of the eye, with discomfort, reddening, and tearing. Direct contact may cause serious corneal burns.  
**Skin Contact:** Dust may cause mechanical irritation and mild dermatitis.  
**Ingestion:** Large oral doses may cause gastrointestinal distress with stomach cramps, dehydration, electrolyte imbalance, abdominal pain, nausea, vomiting, hematemesis, diarrhea, lethargy, immune system effects, fever, dizziness, tightness in the throat, shock, collapse, renal failure, and death.

**Section 12 Ecological Information**

Data not available.

**Section 13 Disposal Considerations**

Dispose in normal trash. Do not breathe dust. At no time should First Reagent, Second Reagent, and Third Reagent be mixed together in dry (powder) form!

**Section 14 Transport Considerations**

Not applicable - packaged as part of a reagent set.

**Section 15 Regulatory Information**

The above information is believed to be correct but does not purport to be all-inclusive and shall be used ONLY as a guide. Keep away from children and pets. Store in a dry, cool place. Keep container tightly closed.

**Section 16 Other Information**

**Preparer:** H. R.  
**Date Prepared:** 10-10-16  
**Supersedes Revision:** 12-16-15  
**Disclaimer:** The information in this Safety Data Sheet is accurate to the best of our knowledge. It is designed only as a guidance for safe use, handling, storage, and disposal. This information is not considered to be a warranty or a quality specification. This company shall not be held liable for any damage resulting from handling or from contact with the above product.

**SDS 1**  
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**Section 1 Product and Company Information**

**Product Name:** Arsenic Quick Strip **Product Number:** 481196-G  
**Recommended use:** Used to detect arsenic in water  
**Restricted use:** Not applicable  
**Mfg. name:** Industrial Test Systems, Inc.  
**Mfg. address:** 1875 Langston Street, Rock Hill, SC  
**Emergency Telephone (poison control):** 1-800-222-1222  
**Mfg. Telephone:** 1-803-329-9712

**Section 2 Hazard Identification**

**Hazard(s):** Pad contains Mercury.  
**Required labeling:** N/A

**Section 3 Composition/Information on Ingredients**

**Reagent:** Mercuric Bromide **CAS:** 7789-47-1 **TSCA#:** N/A  
**RTCS#:** OV7415000 **%:** Approx. 1mg **Hazard:** Oral LD<sub>50</sub> (rat) 40mg/kg

**Section 4 First-Aid Measures**

**Contact Area** **First-aid**  
**Eyes** Flush with copious amounts of cold water for 5 minutes.  
**Skin** Rinse with large amounts of water for 2 minutes. Remove contaminated clothing.  
**Ingestion** Rinse mouth with water. As a precaution, call a physician or Poison Control.  
**Inhalation** Evacuate to fresh air. If breathing is difficult, give oxygen and seek medical advice.

**Most likely effect** Irritation

**Section 5 Fire Fighting Measures**

**Extinguishing media:** Use that which is appropriate for the surrounding fire.  
**Explosion Hazard:** None found **Flash Point:** N/A  
**Special fire fighting procedures:** N/A

**Section 6 Accidental Release Measures**

Sweep up strips and put into a plastic bag labeled "Used Test Strips." Dispose of used strips per local environmental and regulatory requirements. Wash hands after use.

**Section 7 Handling and Storage**

Use standard hygienic practices (no eating, drinking, or smoking) around the product. Wash hands after use. Keep away from children and pets. Keep container tightly closed.

**Section 8 Exposures Controls/Personal Protection**

**OSHA Permissible Limits:** N/A **Engineering controls:** N/A  
**Personal Protective Equipment (PPE):** Use PPE appropriate for the surroundings.  
**Other:** Use gloves to prevent contact irritation. Use eye protection to prevent droplets from entering the eye. Ensure an eyewash station is available.

**Section 9 Physical and Chemical Properties**

**Appearance:** Off-white pad on plastic handle **Melting/Freezing point:** N/A  
**Decomposition temperature:** No data **Upper/Lower flammability limit:** No data  
**Solubility:** N/A **Viscosity:** N/A **Odor:** odorless **Initial boiling point/range:** N/A  
**Vapor Pressure:** N/A **Flash point:** No data **Odor threshold:** N/A  
**Evaporation rate:** N/A **Vapor density:** N/A **Flammability:** flammable  
**pH:** N/A **Partition coefficient:** N/A **Relative density:** N/A  
**Auto-ignition temperature:** No data

**Section 10 Stability and Reactivity**

Product is stable. Hazardous polymerization will not occur. Firefighters should wear full protective clothing and self-contained breathing apparatus when fighting fires involving plastic and PVC materials.

**Section 11 Toxicological Information**

Each strip contains about 1mg Mercuric Bromide so toxicological effects are minimal because of the low exposure. Material, however, is toxic and should be handled carefully to minimize exposure. Place all used test strips into a plastic bag labeled "Used Test Strips." Dispose of used strips per local environmental and regulatory requirements. Wash hands after use.

**Section 12 Ecological Information**

Data not available.

**Section 13 Disposal Considerations**

Dispose of the test strips according to regulatory requirements.

**Section 14 Transport Considerations**

Not applicable - the strips are not hazardous

**Section 15 Regulatory Information**

This strip is considered an article under OSHA rules (CFR29, 1910.1200): "Article means a manufactured item other than a fluid or particle: (i) which is formed to a specific shape or design during manufacture; (ii) which has end use function(s) dependent in whole or in part upon its shape or design during end use; and (iii) which under normal conditions of use does not release more than very small quantities, e.g., minute or trace amounts of a hazardous chemical (as determined under paragraph (d) of this section), and does not pose a physical hazard or health risk to employees".

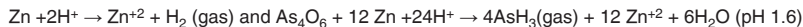
A Safety Data Sheet (SDS) is not required for articles. This SDS is provided as a courtesy.

**Section 16 Other Information**

**Preparer:** H. R. **Date Prepared:** 5-3-17 **Supersedes Revision:** 9-21-16  
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Our products are compliant with all  
49CFR and IATA rules and regulations.

For several years, Industrial Test Systems, Inc. (ITS) committed a major research & development effort to provide better and safer arsenic test kits. The goal was achieved. The test was made safer by using tartaric acid, instead of strong acids, for the reduction of inorganic arsenic ( $\text{As}^{+3}/\text{As}^{+5}$ ) to arsine gas. For these efforts a US Patent was granted for the acceleration of the arsenic detection chemistry by the addition of metal enhancers, iron and nickel salts. This permits Arsenic field tests to be completed faster. The Quick™ series of materials use a modified Turret cap which allows detection of arsenic below 10 ppb (  $\mu\text{g/L}$ ). The reduction reaction is:



The analysis is performed in a closed reaction bottle (plastic) with an appropriate volume of sample (50 to 500 ml). After the 10 minute reduction reaction, the mercuric bromide strip or testing pad is removed and matched to the color chart. A light yellow to brown color change indicates that arsenic is present. The color intensity is proportionately related to the concentration of arsenic in the sample. NOTE: ITS test kits detect free inorganic arsenic only. ICP-MS methods detect inorganic and organic arsenic. If organic arsenic is present, ITS kit results can be expected to give lower values when compared to ICP-MS results.

Typical shelf life of kits is over 12 months. The First Reagent is composed of Tartaric acid with iron and nickel salts; the Second Reagent is composed of MPS, an oxidizer; the Third Reagent is zinc dust; and mercuric bromide strips, which contains about 1mg mercury per strip. After use, the strips should be discarded according to local environmental regulations. Valuable safety information about the kit is in the SDS literature. As a safeguard to minimize the operator's exposure to arsine and hydrogen gas, please run all tests in a well-ventilated area away from open flames and other sources of ignition. Arsine gas is highly toxic; and this precaution becomes more urgent if the water sample has high arsenic levels.

Cordially yours,  
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