

As^{+3} As^{+5}

QUICK™

Rapid Arsenic
Test Kit

Kit Part Number: 481396-5

5 Tests

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FOR BEST RESULTS, FOLLOW KIT INSTRUCTIONS.



WARNING:

Hydrogen and Arsine
gases are generated
during the test. Work in a
well-ventilated area away
from open flames and
other sources of ignition.
Review the Material Safety
Data Sheet before
using chemicals.

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Quick™ can be found at www.epa.gov/etv/verifications/verification-index.html,
verification report. The use of the ETV Name or Logo does not imply approval
or certification of this product nor does it make any explicit or implied warranties or guarantees as to product performance.

481396-5-INST

Revision: 01/24/13

ABOUT KIT # 481396-5:



Part Number: 481396-5, 5 Tests

Kit Components:

- 1 Reaction Bottle, clear PVC, with 100ml line
- 1 White Cap, with white turret, for holding test strip
- 5 Powder Pillows of First Reagent-Large **1** (3.8 gm)
- 5 Powder Pillows of Second Reagent-Medium **2 MPS** (1 gm)
- 10 Powder Pillows of Third Reagent-Small **3 ZINC** (2 gm)
- 5 Arsenic Test Strips in Foil Packets - **Caution:** Each test strip pad contains about 1 mg Mercuric Bromide (HgBr_2)
- This Instruction Booklet with MSDS
- 1 Yellow Cap for mixing
- Kit Box for Components
- Color Chart

This test detects soluble inorganic Arsenic (As^{+3} and As^{+5})

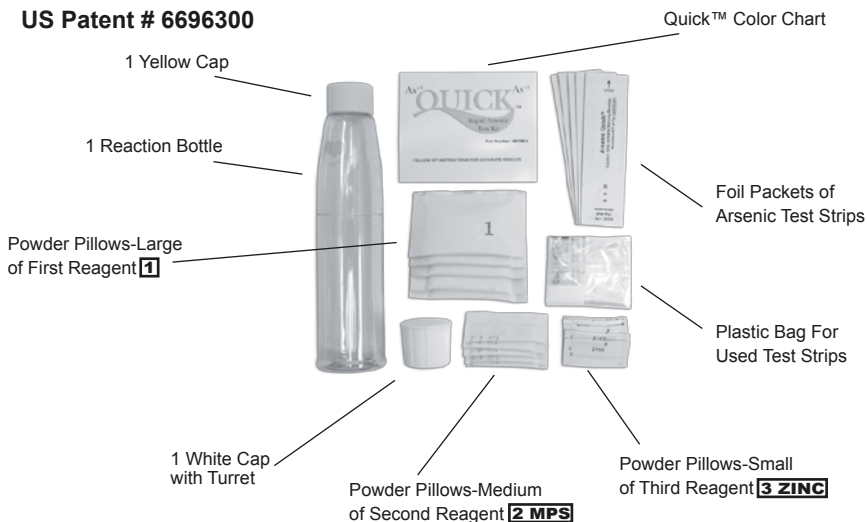
This Arsenic Test Kit provides a safe, simple, and reliable way to test for Arsenic from 0 to 0.5 mg/L (up to 2.5mg/L when using 1/5 dilution method). Follow the instructions carefully to get reliable results. All components are supplied in the kit except for a timer and thermometer. This test tolerates up to 2.0 mg/L Hydrogen Sulfide without interference. No interference was found for this test kit for Antimony up to 0.5mg/L. No interference from Iron or Sulfate was found. It is recommended that the water sample be 22°C - 28°C . The color chart was standardized at 24°C . For reference purposes, record the temperature at which the sample was run. Use all reagents and test strips within the allowed shelf life as marked on each container.

Chemistry of the Reaction (Modified Gutzeit method):

Inorganic Arsenic compounds in the water sample are converted to Arsine (AsH_3) gas by the reaction of Zinc Dust and Tartaric Acid. Ferrous and Nickel salts have been added to accelerate this reaction. The Arsine converts the Mercuric Bromide on the test strip to mixed Mercury halogens (such as AsH_3HgBr) that appear with a color change from white to yellow or brown. Potassium Peroxymonosulfate (second reagent) is added to oxidize Hydrogen Sulfide to Sulfate.

PRECAUTIONS: Hydrogen gas and Arsine gas are generated during the reaction. Work in a well-ventilated area away from fire and other sources of ignition. All reagents are unsuitable for human consumption.

US Patent # 6696300



WARNING: Hydrogen and Arsine gases are generated during the test. Work in a well-ventilated area away from open flames and other sources of ignition. Review the Material Safety Data Sheet before handling any chemicals.



FOLLOW KIT INSTRUCTIONS CLOSELY.
Part Number: 481396-5, 5 Tests

Test Procedure:

1. For best results, the water temperature should be between 22°C to 28°C. Use a thermometer to verify the temperature of the sample.
2. To the Reaction Bottle, slowly and carefully add the water sample to the marked line on the bottle (100 mL).
3. Add **1 Powder Pillow-Large** of First Reagent **1** to the Reaction Bottle. Cap the bottle securely with yellow mixing cap and shake vigorously for 15 seconds.
4. Uncap the Reaction Bottle; add **1 Powder Pillow-Medium** of Second Reagent **2 MPS**. Cap the bottle securely with yellow mixing cap and shake vigorously with bottle upright for 15 seconds. Allow the sample to sit for 2 minutes to minimize Sulfide interference.
5. Uncap the Reaction Bottle and add **2 Powder Pillows-Small** of Third Reagent **3 ZINC**. Cap the bottle securely with yellow mixing cap and shake vigorously for 5 seconds.
6. Remove yellow mixing cap. Recap the bottle immediately and securely using the white cap (must be dry) with turret up (open).
7. Remove one Arsenic test strip from the Arsenic Quick Foil Packet. In order for the results to be accurate, the test strip must be oriented correctly, and inserted to the correct depth. Insert the test strip into the turret as illustrated in Figure 1 and Figure 2:
 - a) Position the strip so that the test pad and red line are facing the back of the white cap (see Figure 1).
 - b) Insert the strip into the turret until the red line is even with the top of the turret, and close (flip down) the turret (see Figure 2). This will hold the test strip in place. (**Note: Steps 6 & 7 should be completed within 30 seconds.**)
8. Using a timer, allow the reaction to occur in an undisturbed, well-ventilated area for 10 minutes. Reaction generates small hydrogen gas bubbles.
9. After the 10 minute wait (but before 12 minutes), pull up the turret and carefully remove the test strip. Do not touch the reaction pad. Use the Quick™ Color Chart to match the reaction pad color.
COMPLETE MATCHING IMMEDIATELY (WAIT NO LONGER THAN 30 SECONDS).
After 30 seconds have elapsed, the colors begin to change (yellow colors fade and browns turn grey or black). For best color matching results use natural daylight; avoid direct sunlight.
10. Record your result.

Note: To ensure complete transfer of reagent, shake or tap the packet before opening to move all reagent to the bottom of the packet.

(Mercuric Bromide strips (Arsenic test strips) will not react with arsine gas if they are wet!)

ATTENTION: Soon after testing is completed, decant liquid from the bottle down a drain that is not used for food preparation and flush with water. Wet Zinc should be collected and disposed of according to local regulations. Rinse the bottle, white cap, and yellow cap with clean water. Shake off any excess water and dry the white cap with a soft tissue. Drying the white turret cap is especially important if you plan to run the next test immediately. Store the used strips in the plastic bag marked "Used Mercuric Bromide (HgBr₂) Test Strips". Keep the used strips inaccessible to children and pets, and dispose according to local environmental regulations.



INSTRUCTIONS FOR BEST ACCURACY

1. To gain confidence in using this test kit for unknown samples, it is highly recommended that you use the kit on a sample with a known inorganic Arsenic concentration value, or with a sample that has been prepared using an Arsenic standard. By making a “practice run” of the test, you will familiarize yourself with all of the procedures necessary to ensure accurate testing results. Additionally, you will have the opportunity to become familiar with the process of color matching, which will help to ensure accurate test results. ITS suggests the test be run in duplicate for better accuracy.
2. The water sample must not be preserved with Nitric Acid or any other preservation method. Small amounts of strong acids will interfere with the test results; and therefore it is best that the water sample be freshly drawn and run within 8 hours. Water samples held for over 24 hours may read as much as 20% lower. The water sample should not contain any significant amount of buffers. If you are planning to send a duplicate sample for ICP laboratory verification, follow preservation requirements for that sample only.
3. The water and ambient temperature are very important to ensure accurate results. As an example, a water temperature of 15°C can result in the color development on the testing pad to be lighter than the actual Arsenic concentration in the tested sample (a false low reading occurs). When the water is cold, warm water sample to 22°C to 28°C before testing (using a microwave is acceptable). If the water temperature is above 28°C your result may read low (accelerator chemistry reacts too fast). Consideration must also be made for the air temperature when running the test. Best results are from 22°C to 28°C (water and air). The color chart and Arsenic Scan chart are calibrated at 24°C.
4. After the test has been run, try to rinse out the reaction bottle with clean tap water as soon as possible. When the reaction chemicals are allowed to sit in the reaction bottle after the reaction time, the zinc may begin to adhere to the bottom of the bottle. When this occurs, you may need to clean the reaction bottle with a bottlebrush. Another method for zinc removal is to use a 20% Hydrochloric Acid (reusable) rinse. Be sure to rinse the reaction bottle with clean tap water before running the next test.
5. When matching your test strip pad with the colors on the Easy-Read™ color chart, it may be helpful to find a color that is clearly lighter than the test strip pad and make note of it (as an example, we will use a value of 10 ppb). Next, find a color that is clearly darker than the test strip pad (as an example, we will use a value of 30 ppb). By defining a lowest and highest possible value range we can assume that the correct color match is 20 ppb. If the 20 ppb color matches, then you have determined your Arsenic level. In some cases, an exact color match will not be available. As an example, if your test strip pad is darker than 20 ppb and slightly lighter than 30 ppb, you can estimate a value 25 ppb as your result. Following these easy steps can make color matching more precise. Careful color matching will assure the best possible result.
6. Levels of Hydrogen Sulfide above 2 mg/L can interfere with this test, resulting in elevated Arsenic readings. Our test kit will eliminate up to 2 mg/L of Sulfide interference. There are two ways to overcome Hydrogen Sulfide levels above 2 mg/L: Allow the water sample to sit at room temperature, uncovered and exposed to air for 8 hours (about 50% of the H₂S gas dissipates for every 8 hours). Industrial Test Systems, Inc. sells Hydrogen Sulfide detection kits (part # 481197-20) for quick, accurate verification of this interfering ion. The test kit detects levels of 0.3, 0.5, 1.0, and 2.0 mg/L (ppm). The Hydrogen Sulfide test kit contains all components necessary to run the test, and is economically priced at \$15.99 for 30 tests.
7. Five tests can be run with each assembly. Do not use components from other kits. Interchanging components may result in inaccurate results since each kit is Quality Control released for accuracy with its given components. Three conditions can result in getting an incorrect reading: the presence of Hydrogen Sulfide above 2ppm; color matching in poor lighting conditions; and color blindness of operator.
8. It has been determined that irrigation of crops with arsenic water increases the soil arsenic levels which can increase the arsenic content in the crop. This Arsenic kit can be used for screening of Arsenic levels in soil. **See procedure on Page 5.**
9. If you have any questions or comments, please feel free to contact our R&D Department at 1-803-329-0162 ext 211 or by email at: its@sensafe.com.

SOIL SCREENING METHOD FOR ARSENIC

Scope and Application: (Non-Digestion Method)

1. This method is valid for detection of Inorganic Arsenic in soil.
2. The minimum Arsenic detection with 0.5 g of soil is 1.0 mg/kg.

Sample Handling and Preparation (Recommended but not required):

3. Dry soil for at least 1 hour at 60°C or until completely dry.
4. Remove visible debris/stones from dried soil.
5. Grind the dried soil into a fine powder and mix until homogenous using a coffee grinder or a mortar and pestle.
(a Coffee Grinder works well)

Interferences:

6. Test tolerates up to 2 mg/kg of Hydrogen Sulfide, 9000 mg/kg of Iron, and 1500 mg/kg of Lead.

Test Procedure:

7. Weigh out 0.5 g of the dried soil and transfer to the Reaction Bottle supplied in the Arsenic Quick™ Kit (Part # 481396-5). Note: If the Sample Handling and Preparation steps are omitted, then use 1g of soil. One gram is used on assumption that soil is 50% moisture by weight.)
8. Fill the bottle to the upper marked line on the Reaction Bottle with 100 mL of Arsenic-free tap water or Distilled water.
9. Follow the standard test procedure for the Arsenic Quick™ Kit starting with Step 3 on page 3.

Calculation:

10. Multiply the test result by 300 (correction multiplier) to get the Arsenic concentration in the soil as mg Arsenic/kg Soil. (Example: 40 µg/L x 300 = 12 mg Arsenic/kg Soil)

NOTE: Because when compared to Acid Digestion/ICP-MS Arsenic analysis, this soil screening method gives typically 50% lower value; a correction multiplier of 300 is used (use 200 as a multiplier if you desire actual measured level).

SOIL SCREENING METHOD FOR ARSENIC

Scope and Application: (Digestion Method)

1. This method is applicable to the determination of Inorganic Arsenic in soil.
2. The method is applicable in the range from 5 to 500 mg As/kg soil.

Sample Handling and Preparation:

3. Dry soil for at least 1 hour at 60°C or until completely dry.
4. Grind the dried soil into a fine powder using a coffee grinder or mortar and pestle and mix until sample is pulverized.
(a Coffee Grinder works well)

Interferences:

5. Test can eliminate up to 2 ppm of Hydrogen Sulfide.
6. Iron concentrations above 9000 mg Fe/kg in soil will give low Arsenic results.
7. Lead concentrations above 1500 mg Pb/kg in soil will give low Arsenic results. (Note: Lead levels of 5000 ppm or greater are considered as Superfund Contamination.) The lead poisons the zinc reaction and suppresses the generation of Hydrogen and Arsine gas. To minimize lead interference, 0.2 g of Potassium Iodide (KI) should be added in the digestion procedure.

Equipment/Apparatus Needed:

8. Heating Block (Hach® COD Reactor Model 45600 or Equivalent)
9. Borosilicate screw cap style glass test tube (16 x 125 mm, Pyrex # 99449-16x or 99449-16xx or Equivalent) with Teflon lined screw cap (Pyrex # 9998-15 or Equivalent)
10. Transfer Pipette
11. Thermometer
12. 50 mL or 100 mL Volumetric Flask

Reagents Needed:

13. 50% (v/v) Hydrochloric Acid [HCl]
14. Distilled Water (or Arsenic-free Tap Water)

Safety Considerations:

15. Use a well-ventilated fume hood when handling Hydrochloric Acid (concentrated or 50%).
16. Wear Personal Protective Equipment (Gloves, Safety Glasses/Goggles, Lab Coat or Apron) when handling Hydrochloric Acid.

Digestion Procedure:

17. Weigh 0.5 g of the dried soil and transfer to a glass test tube.
18. Pipette 4.5 mL of 50% (v/v) HCl into the test tube, secure the screw cap tightly on the test tube and shake upright for 5 seconds. (To minimize particles clinging to the upper walls of test tube and cap, it is recommended not to invert the test tube.)
19. Place test tube in heating block for 1 hour at 95°C. Mix sample at least twice during digestion by carefully shaking test tube upright.
20. After digesting the soil for 1 hour, remove the test tube from the heating block and allow to cool.
21. Cautiously open test tube containing Digested Soil Sample and point cap away from eyes and body. Transfer the cooled digest to a 50 mL volumetric flask. Wash the test tube several times with Distilled or Arsenic-free water and add wash water to the flask without exceeding 50 mL volume. Fill to 50 mL volume with distilled water.

Test Procedure:

22. Transfer 10 mL of the 50 mL diluted digest to the Reaction Bottle supplied in the Arsenic Quick™ Kit (Part # 481396-5). Fill the Reaction Bottle to the upper marked line with Arsenic-free tap water or Distilled water.
23. Follow the standard test procedure for the Arsenic Quick™ Kit starting with Step 3 on page 3.

Calculation:

24. Multiply test result by 1000 (Example: 50 µg/L becomes 50 mg/kg)

MSDS 1

Material Safety Data Sheet

Section 1 Chemical Identification

Catalog # / Description: Part Number 481196-D
Name: First Reagent (1)

Section 2 Composition / Information on Ingredients

CAS#: 87-69-4	L-Tartaric Acid	98.7%
CAS#: 7720-78-7	Iron (II) Sulfate • 7H ₂ O	0.7%
CAS#: 10101-97-0	Nickel (II) Sulfate • 6H ₂ O	0.6%

Section 3 Hazards Identification

Precautionary Statements:

- May be irritating to eyes and nasal passages.
- Low toxicity orally, moderately toxicity intravenously.
- Tartaric Acid is reported to have an oral rabbit LD50 at 5000 mg/kg, and a dermal rat LD50 at 485 mg/kg.

Tartaric Acid Reagent has minimal toxicological effect.

However, inhalation may cause irritation of respiratory tract; ingestion in large amounts may cause gastrointestinal upset; skin or eye contact may cause mild irritation; prolonged exposure may cause allergic reaction. Wash hands after use.

- Iron (II) Sulfate is harmful if swallowed or inhaled.

Causes irritation to skin, eyes, and respiratory tract.

Affects the liver. Oral mouse LD50: 1520 mg/kg.

- Nickel sulfate is toxic. Harmful if swallowed. Possible risk of irreversible effects. May cause sensitization by inhalation and skin contact. Possible carcinogen.

Toxicity data: oral rat LD50: 264 mg/kg.

Section 4 First-Aid Measures

• If swallowed, wash out mouth with water. Call a physician or the Poison Control Center as a precaution.

• In case of skin contact, flush with copious amounts of water for at least 15 minutes.

• In case of contact with eyes, flush with copious amounts of water for at least 15 minutes.

- If inhaled, remove to fresh air. If breathing is difficult, give oxygen and seek medical advice.

Section 5 Fire Fighting Measures

Not Applicable since the amount of First Reagent per kit is negligible.

Section 6 Exposure Controls / Personal Protection

Do not expose to eyes, skin, or clothing. Keep away from children and pets. Wash hands thoroughly after handling. Maintain general hygienic practices when using this product.

Section 7 Physical and Chemical Properties

Appearance and Odor:

- Solid/semi-solid, white powder. Soluble in water.

Physical Properties:

- | | |
|---------------------|----------------|
| • Melting Point: | Not Applicable |
| • Vapor Pressure: | Not Applicable |
| • Specific Gravity: | Not Applicable |
| • Vapor Density: | Not Applicable |

Stability:

- Stable when stored under proper conditions.

Hazardous Polymerization:

- Will not occur.

Incompatibilities:

- Reaction with silver, zinc, aluminum in the presence of water or moisture will release explosive Hydrogen gas.

Section 8 Toxicological Information

Acute Effects:

- Do not breathe dust! Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

Section 9 Other 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.

MSDS 2

Material Safety Data Sheet

Section 1 Chemical Identification

Catalog # / Description: Part Number 481196-E
Name: Second Reagent (2 MPS)

Section 2 Composition / Information on Ingredients

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

Comments: NOTE: CAS# for mixture is 70693-62-8

Section 3 Hazards Identification

Emergency Overview:

- Physical Appearance: White, granular material

• Immediate Concerns: DANGER. CORROSIVE. Causes skin and eye damage. Wear goggles or face shield and rubber gloves when handling. May be fatal if swallowed. Irritating to nose and throat. Avoid inhalation or dust. Remove and wash contaminated clothing before reuse.

Potential Health Effects:

- Eyes: DANGER. Corrosive. Causes eye damage. Do not get in eyes.

Section 4 First-Aid Measures

EYES: If contact with eyes occurs: Immediately flush with cold water for at least 15 minutes. Then get immediate medical attention. SKIN: If contact with skin: Rinse off excess chemical and flush skin with cold water for at least 15 minutes. If skin irritation develops, seek medical attention.

INGESTION: If swallowed: Do not induce vomiting. Drink 1-2 glasses of water to dilute the stomach contents. Never give anything by mouth to an unconscious person. Call a physician immediately.

INHALATION: If inhaled: Remove to fresh air. If breathing is difficult, have trained person administer oxygen. If not breathing, give artificial respiration. Call a physician immediately.

Section 5 Fire Fighting Measures

- This product is not flammable or combustible.
- Will release oxygen when heated, intensifying a fire.

Acidic mist may be present.

- Exercise caution when fighting any chemical fire.
- Extinguishing Media: Water

Section 6 Exposure Controls / Personal Protection

Do not expose to eyes, skin, or clothing. Keep away from children and pets. Wash hands thoroughly after handling. Maintain general hygienic practices when using this product.

Section 7 Physical and Chemical Properties

Appearance and Odor:

- Solid. Granular, free-flowing solid. White.
- Odorless

Physical Properties:

- | | |
|---------------------|----------------|
| • Melting Point: | Not Applicable |
| • Vapor Pressure: | Not Volatile |
| • Specific Gravity: | 1.1 to 1.4 |
| • Vapor Density: | Not Volatile |

Stability:

- Stable when stored under proper conditions.

Hazardous Polymerization:

- Will not occur.

Incompatibilities:

• Mixing with compounds containing halides or active halogens can cause release of the respective halogens if moisture is present. Mixing with cyanides can cause release of hydrogen cyanide 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 Toxicological Information

Acute Effects:

- | | |
|--------------------|--------------------------|
| • Skin Absorption: | >11,000 mg/kg in rabbits |
| • Oral LD50: | 2,000 mg/kg (rat) |
| • Inhalation LC50: | >5 mg/l (rats) (4-hour) |

Section 9 Other 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.

MSDS 3 Material Safety Data Sheet

Section 1 Chemical Identification

Catalog # / Description: Part Number 481196-F
Name: Third Reagent (3 Zinc)

Section 2 Composition / Information on Ingredients

CAS #: 7440-66-6
Chemical Name: Zinc >99%
Synonyms:

- Blue powder, granular zinc, zinc dust, zinc powder

Section 3 Hazards Identification

Precautionary Statements:

- Flammable solid. This material, like many powders, is capable of causing a dust explosion.
- If inhaled, remove to fresh air. If breathing is difficult, give oxygen and seek medical advice.

Section 4 First-Aid Measures

- If swallowed, wash out mouth with water. Call a physician or the Poison Control Center.
- In case of skin contact, flush with copious amounts of water for at least 2 minutes. Remove contaminated clothing and shoes.
- In case of contact with eyes, flush with copious amounts of water for at least 5 minutes. Call a physician.
- If inhaled, remove to fresh air. If breathing is difficult, give oxygen and seek medical advice.

Section 5 Fire Fighting Measures

Fire/Explosion Hazard:

- Dust may form a flammable/explosive mixture with air. May form explosive mixture with oxidizers.
- Extinguishing Media:
- Sand or inert dry powder. Do not use water.

Section 6 Exposure Controls / Personal Protection

Do not get in eyes, on skin, on clothing. Keep away from children and pets. Wash hands thoroughly after handling. Use with adequate ventilation. Maintain general hygienic practices when using this product.

Section 7 Physical and Chemical Properties

Appearance and Odor:
Solid bluish-gray powder

Physical Properties:

- Melting Point: 419°C
- Vapor Pressure: Not Applicable
- Specific Gravity: 7.14
- Vapor Density: Not Applicable

Stability:

- Stable when stored dried and at room temperature.

Hazardous Polymerization:

- Will not occur.

Section 8 Toxicological Information

- Skin and eye irritation may result from intermittent exposure.
- Avoid creating dust. DO NOT breathe dust.

Section 9 Other 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. Dispose of empty bottle as normal trash. Keep away from children and pets.

MSDS 4 Material Safety Data Sheet

Section 1 Chemical Identification

Catalog # / Description: Part Number 481196-G
Name: Arsenic Quick™ Test Strips

Section 2 Composition / Information on Ingredients

CAS #: 7789-47-1
Synonyms:

- Toxic ingredient is: Mercuric Bromide.

Section 3 Hazards Identification

Precautionary Statements:

- Toxic poison is contained in test strip pad (about 1mg / strip).
- Mercuric Bromide is reported to have an oral rat LD50 at 40mg/kg, and a dermal rat LD50 at 100mg/kg.

Section 4 First-Aid Measures

- If swallowed, wash out mouth with water. Call a physician or the Poison Control Center as a precaution.
- In case of skin contact, flush with copious amounts of water for at least 2 minutes. Remove contaminated clothing and shoes.
- In case of contact with eyes, flush with copious amounts of water for at least 5 minutes.
- If inhaled, remove to fresh air. If breathing is difficult, give oxygen and seek medical advice.

Section 5 Fire Fighting Measures

Not Applicable since the amount of Mercury per kit is negligible.

Section 6 Exposure Controls / Personal Protection

Do not expose to eyes, skin, or clothing. Keep away from children and pets. Wash hands thoroughly after handling. Maintain general hygienic practices when using this product.

Section 7 Physical and Chemical Properties

Appearance and Odor:

- Solid/semi-solid, white paper pad (containing Mercuric Bromide) attached to plastic strip.

Physical Properties:

- Melting Point: Not Applicable
- Vapor Pressure: Not Applicable
- Specific Gravity: Not Applicable
- Vapor Density: Not Applicable

Stability:

- Stable when stored under proper conditions.

Hazardous Polymerization:

- Will not occur.

Section 8 Toxicological Information

Acute Effects:

- Each strip contains about 1mg Mercuric Bromide so toxicological effect is minimal because of the amount. However, material is toxic and should be handled carefully to minimize exposure. Place all used test strips into plastic bag labeled "Used Test Strips". Dispose of used strips per environmental and regulatory requirements in your community. Wash hands after use.

Section 9 Other 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. Dispose of the used test strips as regulations require. Keep away from children and pets.

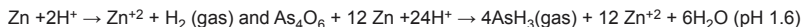
Our products are compliant with all 49CFR and IATA rules and regulations.

LETTER FROM THE KIT INVENTOR

Thank you for purchasing our U.S. Patented (# 6,696,300) Arsenic Quick™ II Kit. Our company has trademarked the kits Quick™ because of the short 14 minute time for analysis.

The Drinking Water standard of the US EPA and the World Health Organization (WHO) allows a maximum contaminant level of 10 ppb (µg/L) for Arsenic. The old US EPA level of 50 ppb (µg/L) remains as the maximum contaminant level for many countries in the world.


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 (As⁺³/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™ II series of kits use a modified Turret cap which allows detection of arsenic below 10 ppb (µg/L). The reduction reactions utilized in all kits are as follows:



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 or color analyzed by the Quick™ Arsenic Scan instrument. 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.

Quick™ Arsenic Test Kits Available:

US Patent # 6696300

PRODUCT NAME (PART NUMBER)	NO. OF TESTS		OPTIMUM RANGE* ppb (µg/L)	TYPICAL COLOR CHART DETECTION LEVELS ppb (µg/L)	TYPICAL ACCURACY** OF DUPLICATES USING QUICK™ ARSENIC SCAN
Arsenic Quick™ Mini Kit (481396-5) (Can also be used for soil analysis.)	5	YES	10 to 200	0, 5, 10, 20, 60, 100, 300, 500, >500, >>500	+/-18 ppb or +/-30%
Arsenic Quick™ Mini Kit (481396-W) (for wood analysis only.)	5	N/A	10 to 200	0, 5, 10, 20, 60, 100, 300, 500, >500, >>500	+/-18 ppb or +/-30%
Arsenic Quick™ II Mini Kit (481303-5)	5	YES	3 to 20	<1, 2, 3, 4, 5, 6, 7, 8, 10, 13, 20, 25, 30, 40, >50, >80, >120, >160	+/-1.2 ppb or +/-16%
Arsenic Low Range Quick™ II Mini Kit (481301-5)	5	YES	1 to 10	<0.5, 1, 1.5, 2, 3, 4, 5, 6, 7, 8, 12, >20, >30, >50	+/-0.8 ppb or +/-14%
Arsenic Ultra-Low Quick™ II Mini Kit (481300-5)	5	YES	0.5 to 6	0, 0.3, 0.7, 1.0, 1.5, 2, 2.5, 3, 3.5, 4, 5, 6, 8, 10, 13, 20, >20	+/-0.4 ppb or +/-12%
Arsenic Quick™ Kit (481396) (Can also be used for soil analysis.)	100	YES	10 to 200	5, 10, 20, 30, 40, 50, 60, 80, 100, 150, 200, 250, 300, 400, 500, >500	+/-18 ppb or +/-30%
Arsenic Low Range Quick™ (481297-I)	50	YES	7 to 80	<2, 4, 10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 100, >150, >300	+/-8 ppb or +/-25%
Arsenic Quick™ II (481303)	50	YES	3 to 20	<1, 2, 3, 4, 5, 6, 7, 8, 10, 13, 20, 25, 30, 40, >50, >80, >120, >160	+/-1.2 ppb or +/-16%
Arsenic Low Range Quick™ II (481301)	50	YES	1 to 10	<0.5, 1, 1.5, 2, 3, 4, 5, 6, 7, 8, 12, >20, >30, >50	+/-0.8 ppb or +/-14%
Arsenic Ultra-Low Quick™ II (481300)	25	YES	0.5 to 6	0, 0.3, 0.7, 1.0, 1.5, 2, 2.5, 3, 3.5, 4, 5, 6, 8, 10, 13, 20, >20	+/-0.4 ppb or +/-12%
Quick™ Arsenic Scan Instrument (481305)	1 meter	YES	N/A	0.01 to >1.00 color density ppb (µg/L) (as low as 0.2 ppb (µg/L) arsenic)	(see above)

Information on the performance characteristics of Quick™ can be found at www.epa.gov/etv, or call ITS at 1-800-861-9712 for a copy of the ETV verification report. The use of the ETV® Name or Logo does not imply approval or certification of this product nor does it make any explicit or implied warranties or guarantees as to product performance.

*Accuracy was determined using the EPA/ETV Test Verified Performance. The Typical Accuracy listed is for use with the Quick™ Arsenic Scan instrument measuring reference (arsenic) standards. Kit accuracy is the range of the values listed. (Example only: Quick™ II. If the mean is 40 ppb, then the typical accuracy is +/-18 ppb which is larger than +/-12 ppb (40 ppb x 30%).

Where precision is important, ITS recommends that you run the water sample in duplicate, since the typical color matching is within one color block. For best precision consider the purchase of our Quick™ Arsenic Scan instrument. This unit is ideal for use with all test kits. Please contact our sales department at 803-329-9712 for more information or to order the Quick™ Arsenic Scan instrument.

Typical shelf life of kits is over 12 months. The kit includes First Reagent (Tartaric acid with iron and nickel salts); Second Reagent (MPS, an oxidizer); Third Reagent (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. The Second Reagent must not be shipped by passenger airlines. Valuable information about the kit is in the MSDS 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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