

## SOIL TEST PROCEDURE

(Non-Digestion Method)

### **Scope and Application:**

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 100mL (upper) scored line on the Reaction Bottle with Arsenic-free tap water or Distilled water.
9. Follow the standard test procedure for the Arsenic Quick™ Kit starting with the Reagent 1 addition step.

### **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 = 1200 µg/L = 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). **NOTE:** Advanced users can access the Acid Digestion/ICP-MS Arsenic analysis method at [sensa.com/quick-arsenic/](http://sensa.com/quick-arsenic/).

## WOOD TEST PROCEDURE

Ordinarily you could cut small wood splinters with a sharp knife from non-weathered wood to test for arsenic; however, since weathered wood will have the arsenic leached out from the surface, this technique would not get a representative wood sample. The older and more weathered the wood the deeper sample core of the wood is required. We recommend that you use a ¼" drill bit and a portable drill. Sampling the wood: Using a ¼" drill bit, drill a wood sample from an intact location on the wood. Usually a sample drilled ½" deep is adequate. If wood is older than 20 years you should drill about 1" into the wood to get a good wood sample. Drill slowly into the wood, and simultaneously you should have a small, stiff cardboard (or any other convenient collector) below the drilling area to catch the drill dust generated by the drilling. Additional wood material will be generated as you pull out the drill from the core. This material must be added to the sample for testing (approximately ½ teaspoon of wood dust should be collected). Carefully add all the wood drilled dust generated to the Reaction Bottle. You are ready to do the Arsenic Test.

1. Add wood chips (see procedure above) to the Reaction Bottle.
2. To the Reaction Bottle, slowly add arsenic-free tap water to the 50mL (middle) scored line on the bottle.
3. Add **1 Powder Pillow** of First Reagent **1** to the Reaction Bottle.
4. Add **1 Powder Pillow** of Second Reagent **2 MPS** to the Reaction Bottle.
5. Cap bottle with yellow mixing cap and shake vigorously for 15 seconds to dissolve the reagents in the water.
6. Let the solution sit for 2 minutes, which extracts arsenic from wood.
7. Add **1 Powder Pillow** of Third Reagent **3 ZINC** to the reaction bottle. Cap securely with the yellow mixing cap and shake vigorously for 5 seconds. For best results, complete Steps 8 and 9 within the next 30 seconds.
8. Remove yellow mixing cap. Recap bottle securely using the white cap (must be dry) with turret up (open).
9. Remove one Arsenic test strip from the test strip 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 2 and Figure 3. Position the strip so that the test pad and red line are facing the back of the white cap (see Figure 2). 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 3). This will hold the test strip in place.
10. Using a timer, allow the reaction to occur in an undisturbed, well ventilated area for 5 minutes. Reaction generates small hydrogen gas bubbles and arsine gas if arsenic is present.
11. After the 5 minute wait, pull up the turret and carefully remove the test strip. Do not touch the reaction pad. Observe the color of the test strip and determine arsenic concentration:  
**White** indicates absence of arsenic (no arsenic).  
**Yellow** indicates moderate amount of arsenic present (arsenic present).  
**Brown** indicates high amount of arsenic present (arsenic present).

Complete color observation immediately (within 30 seconds).