

## Instruction Manual

# HI 38067 Silica High Range Test Kit



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Dear Customer,

Thank you for choosing a Hanna Product.

Please read the instruction sheet carefully before using the test kit. It will provide you with the necessary information for correct use of the kit. If you need additional information, do not hesitate to e-mail us at tech@hannainst.com.

Remove the chemical test kit from the packing material and examine it carefully to make sure that no damage has occurred during shipping. If there is any noticeable damage, notify your Dealer or the nearest Hanna office immediately.

Each kit is supplied with:

- HI 38067A-0 Silica Reagent, 1 bottle with dropper (25 mL);
- HI 38067B-0 Silica Reagent, packets (100 pcs);
- HI 38067C-0 Silica Reagent, packets (100 pcs);
- Demineralizer Bottle with filter cap for about 12 liters of deionized water (depending on the hardness level of water to be treated);
- 1 checker disc (containing the 38067 disc);
- 2 glass vials with caps;
- 1 plastic pipette (3 mL);
- 1 syringe (1 mL) with tip.

Note: Any damaged or defective item must be returned in its original packing materials.

## SPECIFICATIONS

Range	0 to 40 mg/L (ppm) as SiO <sub>2</sub> 0 to 800 mg/L (ppm) as SiO <sub>2</sub>
Smallest Increment	1 mg/L (ppm) SiO <sub>2</sub> in the 0-40 range 40 mg/L (ppm) SiO <sub>2</sub> in the 0-800 range
Analysis Method	Colorimetric
Sample Size	5 mL or 0.25 mL
Number of Tests	100
Case Dimensions	235x175x115 mm (9.2x6.9x4.5")
Shipping Weight	712.5 g (25.1 oz)

## SIGNIFICANCE AND USE

Silicon does not occur free in nature, but rather as silica (SiO<sub>2</sub>) in crystalline forms, combined with other oxides and metals in a variety of silicates. Silicon is usually reported as silica when rocks, sediments, soil and water are analyzed. Silica is only slightly soluble in water; solubility and form of silica in water depend on pH of water and on the minerals, containing silica, in contact with water. The silica content of natural water is in the 5 to 25 ppm range. It is important to estimate silica concentration in case of some industrial installation such as steam generation and cooling water systems.

Note: mg/L is equivalent to ppm (parts per million).

## CHEMICAL REACTION

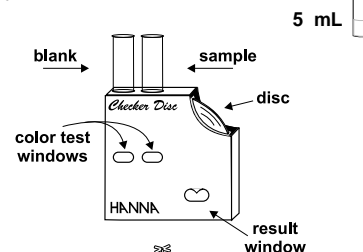
Determination of silica concentration is an adaptation of the ASTM D859 method of the heteropoly blue method. The reaction between silica and reagents causes a blue tint in the sample which is proportional to the silica concentration.

## INSTRUCTIONS

READ THE ENTIRE INSTRUCTIONS BEFORE USING THE KIT

- 1- Using the plastic pipette, fill each glass vial with 5 mL of sample (up to the mark).

- 2- Insert one of the vials into the left hand opening of the checker disc. This is the blank.



- 3- Remove the cap and fill the Demineralizer Bottle with tap water.

- 4- Replace the cap and shake gently for at least 2 minutes. The demineralized water is now ready.

- 5- Flip open the top of the Demineralizer Bottle cap. By gently squeezing the bottle, add demineralized water to the other vial up to the 10 mL mark. Replace the cap and shake to mix.

- 6- Remove the cap and add 4 drops of HI 38067A-0 reagent. Replace the cap, shake and wait for 7 minutes.

- 7- Remove the cap, add 1 packet of HI 38067B-0 reagent. Replace the cap, shake and wait for 2 minutes.

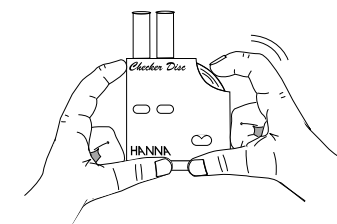
- 8- Remove the cap and add 1 packet of HI 38067C-0 reagent. Replace the cap and shake until the powder has completely dissolved.

- 9- Wait for 5 minutes to allow reaction to complete. This is the reacted sample.

- 10- Remove the cap and insert the reacted sample into the right hand opening of the checker disc.

- 11- Hold the checker disc so that a light source illuminates the samples from the back of the windows.

- 12- Keep the checker disc at a distance of 30-40 cm (12-16") to match the color. Rotate the disc while looking at the color test windows and stop when you find the color match.

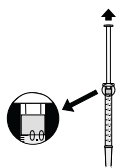


- 13- Read the value in the result window directly in mg/L (or ppm) of Silica.

- 14- If concentration of Silica is higher than 40 ppm, perform the test as follows.

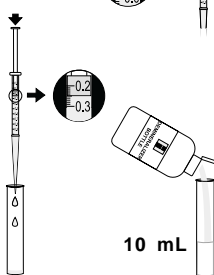
- 15- Prepare the blank as before (steps 1 and 2).

16- Using the syringe, add 0.25 mL of sample to the other vial and add demineralized water up to the 10 mL mark. Replace the cap and shake.



Note: To measure exactly

0.25 mL of sample with the syringe, push the plunger completely into the syringe and insert the tip into sample. Pull the plunger out until the lower edge of the seal is on the 0.0 mL



mark of the syringe. Insert the syringe into the vial and push the reagent out until the lower edge of the seal is on the 0.25 mL mark.

15- Follow the instructions from step 6 to 12.

16- Read the value in the result window and multiply it by 20 to obtain mg/L (or ppm) of Silica.

For best results: Perform the reading three times and take the average value (divide by 3 the sum of the three numbers). Intensely colored samples will make the color matching difficult and they should be adequately treated before performing the test. Suspended matter in large amounts should be removed by prior filtration.

Caution: Ultraviolet radiation may cause fading of colors. When not in use, keep the disc protected from light, in a cool and dry place.

Interferences: phosphate above 50 ppm, sulfide, high dissolved salts concentration, high concentration of iron.

## REFERENCES

Adaptation of the ASTM D859 method of the Heteropoly Blue Method.

## HEALTH AND SAFETY

The chemicals contained in this kit may be hazardous if improperly handled. Read the relevant Health and Safety Data Sheet before performing this test.