

## Instruction Manual

# HI 38073 Phosphorus Test Kit for Soil

**HANNA**  
instruments  
www.hannainst.com

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](mailto: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 93713-0 Reagent, packets (100 pcs);
- 1 checker disc (containing the 38073 disc);
- 2 glass vials with caps;
- 1 syringe (1 mL) with tip.

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

## SPECIFICATIONS

Range	0 to 130 mg/L (ppm) as Phosphorus
Smallest Increment	3.3 mg/L (ppm) Phosphorus
Analysis Method	Colorimetric
Sample Size	0.75 mL extract
Number of Tests	100
Case Dimensions	235x175x115 mm (9.2x6.9x4.5")
Shipping Weight	435.5 g (15.4 oz.)

## SIGNIFICANCE AND USE

Phosphorus belongs to the primary macronutrient group. It is an essential element to plant growth and is needed in large amounts. Phosphorus exists in soil mainly as P. It is adsorbed at the surfaces of iron and aluminum oxides or in association with calcium. It also occurs in organic forms and may be released by microbial activity. It is absorbed by roots only in its maximum oxidation state as the orthophosphoric ion  $H_2PO_4^-$  or  $HPO_4^{2-}$ , depending on the pH. Moreover, its absorption is mostly efficient for pH values between 5 and 7: this implies that acidic or calcareous soil needs to be corrected to neutral pH values for better tillage yield.

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

## CHEMICAL REACTION

Adaptation of the ascorbic acid method. The reaction between phosphate and the reagent causes a blue tint in the sample.

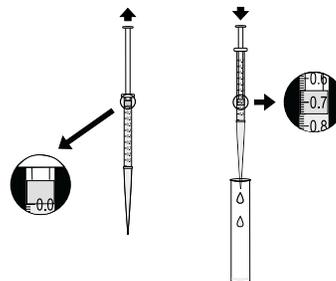
## INSTRUCTIONS

READ THE ENTIRE INSTRUCTIONS BEFORE USING THE KIT

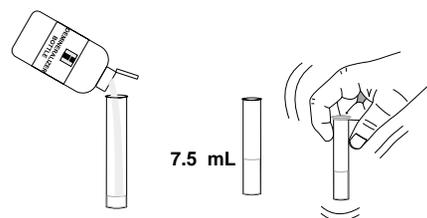
- Obtain a Mehlich extract from the soil sample by performing the Mehlich extraction.
- Using the syringe, add to each glass vial 0.75 mL of sample.

Note: To measure exactly 0.75 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 0.0 mL mark of the syringe. Insert the syringe into the vial and push the sample out until the lower edge of the seal is on

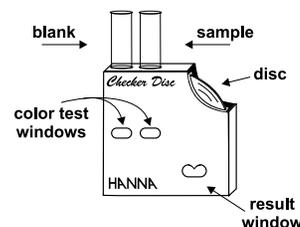
the 0.75 mL mark (the longer mark between 0.7 and 0.8).



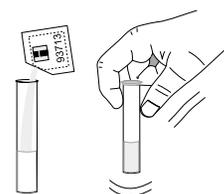
- Add to each glass vial demineralized water up to the 7.5 mL mark, replace caps and swirl to mix.



- Remove caps and insert one of the vials into the left hand opening of the checker disc. This is the blank.



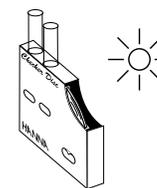
- Add to the other glass vial 1 packet of HI 93713-0 Reagent. Replace the cap and shake vigorously for 20 seconds. This is the reacted sample.



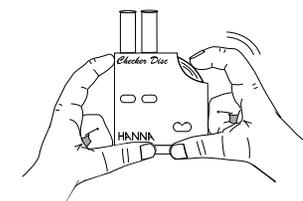
- Wait for 3 minutes.



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



- Hold the checker disc so that a light source illuminates the samples from the back of the windows.
- 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. Read the value in the result window, multiply by 3.3 and record it in mg/L (or ppm) of Phosphorus.



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: iron above 5 ppm; copper above 10 ppm; hydrogen sulfide, arsenate and highly buffered samples.

## REFERENCES

Standard Methods for the Examination of Water and Wastewater, 18<sup>th</sup> edition, 1992.

P. Sequi, Chimica del suolo, Patron Editore, Ed. 1991.

## 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.