Instruction Manual

HI 3857
Detergents
Test Kit

HANNA instruments

www.hannainst.com

Dear Customer,

Thank you for choosing a Hanna Product.

Please read the instructions carefully before using the chemical test kit. It will provide you with the necessary information for correct use of the kit.

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 3857A-0 Detergents Reagent, 1 bottle with dropper (15 mL);
- HI 3857B-0 Detergents Reagent, 1 bottle with dropper (15 mL);
- Chloroform, 1 glass bottle (180 mL);
- Demineralizer Bottle, 1 bottle with filter cap for about 12 liters of deionized water (depending on the hardness level of water to be treated).;
- 1 checker disc;
- 2 long glass vials (30 mL) with caps;
- 1 long plastic pipette;
- 1 plastic pipette (3 mL);
- 1 plastic pipette (1 mL).

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

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SPECIFICATIONS

Range	0.00 to 1.30 mg/L as ABS/LAS
Smallest Increment	0.02 mg/L
Analysis Method	Colorimetric
Sample Size	20 mL
Number of Tests	35
Case Dimensions	235x175x115 mm (9.2x6.9x4.5") 150x150x220 mm (5.9x5.9x8.7")
Shipping Weight	1245 g (43.9 oz.)

SIGNIFICANCE AND USE

Detergents can enter water and wastewater by discharge of domestic and industrial cleansing waters. The most widely used detergents are linear alkyl sulfonates (LAS) and alkyl benzene sulfonates (ABS): LAS are preferable to ABS because they are biodegradable, thus readily decomposed by microorganisms. The presence of anionic LAS/ABS detergents in natural waters should be below 0.1 mg/L and in raw domestic wastewater in the range from 1 to 20 mg/L.

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

CHEMICAL REACTION

The aqueous solution containing the detergents is treated with the colored indicator. The reaction product can be extracted in the chloroform layer, whilst the original dyestuff is insoluble in the organic medium. The intensity of the color developed is proportional to the concentration of the detergents present.

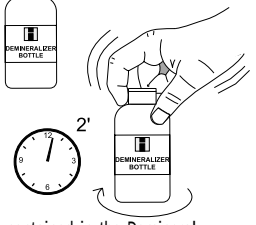
INSTRUCTIONS

READ THE ENTIRE INSTRUCTIONS BEFORE USING THE KIT

Note: Non soap anionic surfactants commonly used in detergent formulations are strongly responsive. Soaps, as alkali salts of fatty acids do not respond to the test.

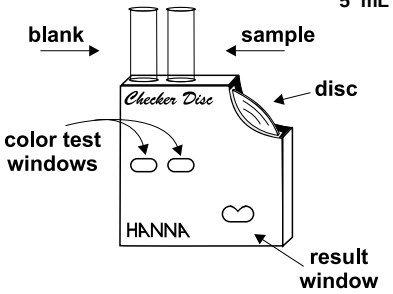
1- Remove the cap and fill the Demineralizer Bottle with tap water.

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

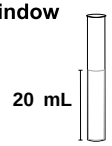


Note: The ion exchange resin contained in the Demineralizer Bottle is provided with an indicator substance. The indicator will change from green to blue when the resin has been exhausted and has to be replaced with a new one.

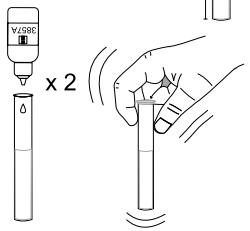
3- Fill one glass vial with 5 mL of sample. This is the blank. Insert the blank into the left hand opening of the checker disc.



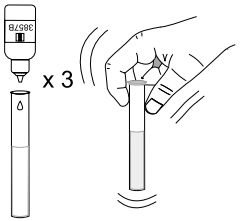
4- Fill the other glass vial with 20 mL of the sample, up to the mark.



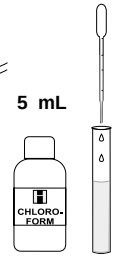
5- Add 2 drops of HI 3857A-0 Detergents Reagent. Replace the cap and swirl to mix.



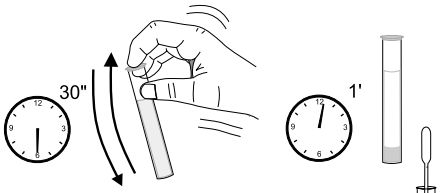
6- Add 3 drops of HI 3857B-0 Detergents Reagent, replace the cap and swirl to mix. The solution will turn a light blue color.



7- Using the 3 mL plastic pipette, add exactly 5 mL of Chloroform. The chloroform will sink to the bottom of the vial because it is heavier than water.

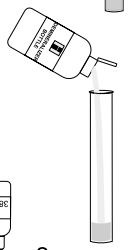


8- Cap the vial tight and mix by inverting it slowly for 30 seconds. Let it stand for about 1 minute until the chloroform layer separates from the aqueous layer. The color of the aqueous layer will fade slightly, while the chloroform layer turns slightly blue.

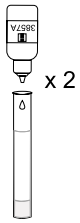


9- Using the long plastic pipette, remove the *upper* aqueous layer and dispose of it. *Do not remove* the lower chloroform layer too!

10- Open the upper part of the Demineralizer Bottle cap and, squirting gently, add to the vial 20 mL of demineralized water, up to the 25 mL mark.

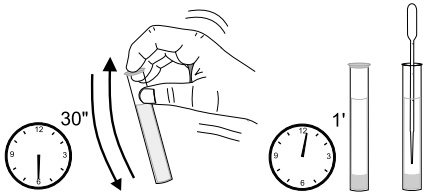


11- Add 2 drops of HI 3857A-0 reagent.



12- Cap the vial tight and mix by inverting slowly for 30 seconds. Let it stand for at least 1 minute - until the aqueous layer is unclouded- to allow the chloroform

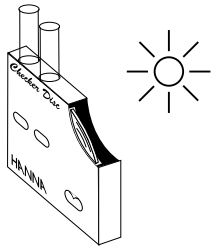
layer to separate from the aqueous layer, as described above. Then, using the long pipette, remove the upper aqueous layer and dispose of it.



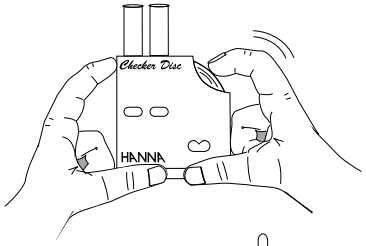
13- Repeat from step 10 to 12. The colored chloroform layer is the reacted sample.

14- Insert the reacted sample into the right hand opening of the checker disc.

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

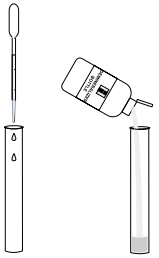


16- Rotate the disc while looking at the color test windows and stop when you find the color match. Read the value in the result window and record it in mg/L (or ppm) of Detergents (LAS and/or ABS).



17- If the color is too intense to make a color match, then the original sample needs to be diluted. In this case, using the 1 mL plastic pipette, add to the vial 1 mL of sample. Fill the vial with demineralized water up to the 20 mL mark exactly. Follow the procedure from step 5 to step 16 and multiply the result obtained by 20. The blank is prepared in the same way as described in point 3.

1 mL of sample



18- Before starting a new test rinse the glass vials and the 1 mL plastic pipette several times with sample to be analyzed. Rinse the glass vials and the 1 mL plastic pipette in tap water before storing.

Note: Do not mix up the plastic pipettes!

Always use the 3 mL pipette for adding the Chloroform, the long pipette for removing the aqueous layer and the 1 mL pipette for adding the sample.

For best results: Intensely colored samples will make the color matching determination difficult and they should be adequately treated before performing the test. Suspended matter in large amounts should be removed by prior filtration.

The temperature should be higher than 15°C, otherwise the sample may become turbid.

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

REFERENCES

Standard Methods for the Examination of Water and Wastewater, 18th edition, 1992

HEALTH AND SAFETY

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