

## Instruction Manual

# HI 3859 Glycol Yes/No Test Kit



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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 3859A-0 Glycol Yes/No Reagent, 1 bottle (125 mL);
- HI 3859B-0 Glycol Yes/No Reagent, packets (25 pcs);
- HI 3859C-0 Glycol Yes/No Reagent, packets (25 pcs);
- HI 3859 Glycol Standard 0.025%, 1 bottle with dropper (25 mL);
- 1 plastic pipette (3mL), for HI 3859A-0 Reagent;
- 25 plastic pipettes (1 mL);
- 2 glass vials (10 mL) with cap;
- 1 brush.

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

ISTR3859 12/99 PRINTED IN ITALY

## SPECIFICATIONS

Range	The test detects traces of glycol above 30 ppm
Analysis Method	Visual/Appearance of color
Sample Size	0.5 mL
Number of Tests	25
Case Dimensions	235x175x115 mm (9.2x6.9x4.5")
Shipping Weight	380 g (13.4 oz.)

## SIGNIFICANCE AND USE

Ethylene glycol is widely used as a coolant and antifreeze. Its presence in motor oils is an indication of a perforated engine block or of a leakage in the cooling systems. The Hanna Glycol test kit can be used for water as well as oil samples to determine traces of ethylene glycol and other 1,2 glycols above 30 ppm. For better results test samples from used motor oil: samples from new oils can give erroneous positive results. Never test oils from hot engines. Use the HI 3859 Glycol Standard 0.025% included in the Kit to easily recognize a positive result in the form of an intense purple color.

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

## CHEMICAL REACTION

Ethylene glycol and other 1,2 glycols are determined by a two step reaction:

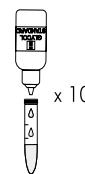
- Step 1: glycol is oxidized to two carbonyl groups under acidic conditions;
- Step 2: the carbonyl groups react with the indicator in the HI 3859C-0 reagent powder packet to give a colored solution.

## INSTRUCTIONS

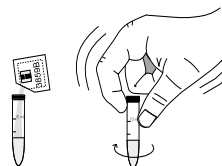
READ THE ENTIRE INSTRUCTIONS BEFORE USING THE KIT

Note: to learn how to recognize the presence of glycol you can use the HI 3859 Glycol Standard 0.025%.

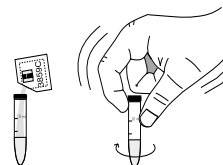
Procedure: add 10 drops of HI 3859 Glycol Standard 0.025% to 0.5 mL of your sample and follow the instructions below: an intense purple color will develop.



- Unscrew the cap of the glass vial and fill it with 5 mL of HI 3859A-0 reagent to the mark using the 3 mL plastic pipette. Add 0.5 mL of your sample using the 1 mL plastic pipette.
- Add the content of one packet of HI 3859B-0 reagent, replace the cap and mix until any solid element is totally dissolved.



- Wait for 20-25 minutes or place the vial in hot tap water for 5 minutes.
- Carefully unscrew the vial and add one packet of HI 3859C-0 reagent; replace the cap and mix well until the reagent is completely dissolved.



- Wait for 75 minutes at room temperature or place the

vial in hot tap water for 20 minutes.

- Detect the presence/absence of glycol in your sample by the color developed:

ppm of glycol	Color
0-30	yellow-brown
30-75	light purple
more than 75	dark purple

Note: always wait for the final color to be developed. Colors can turn from

yellow to colorless to light purple (for low range glycol)  
orange to grey/green to dark purple (for high range glycol)

Note: before performing a new test, rinse thoroughly the vial under water and clean it by means of the brush with some soap.

Warning: HI 3859B-0 and HI 3859C-0 reagents can be disposed as ordinary refuse. HI 3859A-0 reagent and the content of the vial after use are generally classified as special wastes. Arrange disposal with a Chemical Disposal company or contact your Local Authorities for advice.

## REFERENCES

"Advanced Organic Chemistry", J.March, 4<sup>th</sup> ed. Wiley Interscience.

## HEALTH AND SAFETY

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