

## HI 3897 Extra Virgin Olive Oil Acidity

### Test Kit



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:

- 1 HI 1801MD magnetic stirrer;
- HI 3897-0 Titrant Solution, 1 bottle (20 mL);
- Organic Solvent, 6 bottles (40 mL each) with one magnetic bar each;
- 1 calibrated syringe of 5.0 mL;
- 1 calibrated syringe of 1.0 mL with tip.

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

### Specifications

Range	0 to 1% acidity
Smallest Increment	0.01 mL = 0.01 %
Analysis Method	Titration
Sample Size	4.6 mL (or 4.0 g)
Number of Tests	6
Case Dimensions	112 x 390 x 318 mm
Shipping Weight	3000 g

ISTR3897R2 07/04

### Significance and Use

Acidity defined as oleic acid, is a parameter that indicates the oil freshness: a high acidity value shows the oil is becoming rancid, thus the oil quality is decreasing. According to **CEE 2568/91** regulation, olive oil is called extra virgin when its acidity is below 1%: see table 1.

Acidity expressed in oleic acid is used to discriminate extra virgin olive oil from other olive oils. It indicates an extraction process made soon after the olive harvesting and with natural, non chemical methods.

**Table 1**

Category	Acidity %
extra virgin olive oil	$\leq 1.0$
virgin olive oil	$\leq 2.0$
ordinary virgin olive oil	$\leq 3.3$
virgin lampante olive oil	$> 3.3$

### Chemical Reaction

The oil sample is firstly dissolved in an organic solvent reagent (ethanol/ether); then it is titrated with a basic solution (OH<sup>-</sup>). The final point of the titration is indicated by the change in color of the solution, which turns from yellow/green of the oil to pink.

### Instructions

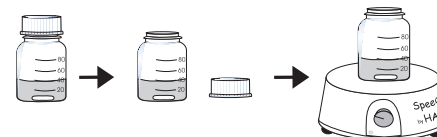
READ ALL INSTRUCTIONS BEFORE USING THE TEST KIT



**CAUTION!**

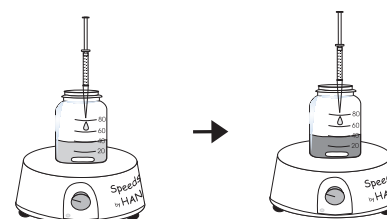
Carefully open the bottle of the Organic Solvent reagent because it may be under pressure!

- Remove the cap from 1 bottle of Organic Solvent reagent. Place the bottle on the magnetic stirrer and start a gentle stirring.



- Using the 1.0 mL syringe with tip, add the HI 3897-0 Titrant Solution reagent dropwise. Continue adding the Titratant Solution reagent until the solution in the bottle changes from colorless to a persistent light pink. Replace the cap.

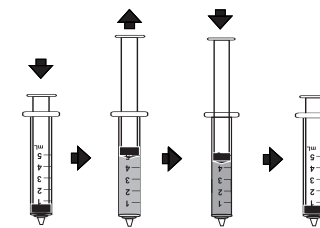
**Note:** stop adding the HI 3897-0 Titrant Solution reagent to the bottle as soon as the solution is persistently light pink colored.



- Take 4.6 mL of oil sample by use of the 5.0 mL syringe. Alternatively, weight about 4.0 g ("w" grams) of oil by use of an analytical balance.

**Note:** to dose exactly 4.6 mL of the oil sample:

- push the plunger completely into the syringe,
- insert the tip into the oil sample,
- pull the plunger up until the lower edge of the seal is exactly on the 5 mL mark,
- take out the syringe and clean the outside of the syringe tip. Be sure that no drops are hanging on the tip of the syringe, if so eliminate them,
- then, keeping the syringe in vertical position above the oil sample, push the plunger down into the syringe, till the 4.6 mL sign,
- be sure that no drops are hanging on the tip of the syringe, if so eliminate them,
- then, keeping the syringe in vertical position above the (open) bottle of Organic Solvent, push the plunger completely down into the syringe. Now the exact amount of 4.6 mL has been added to the bottle.



- Remove the cap and add the oil sample to the Organic Solvent bottle. Replace the cap.

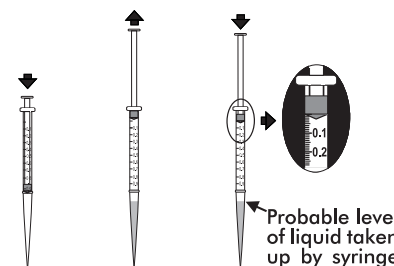


- Place the sample on the magnetic stirrer and stir gently until all the oil sample is dissolved in the Organic Solvent reagent.

- Using the 1.0 mL graduated syringe with tip, take 1.0 mL of HI 3897-0 Titrant Solution reagent.

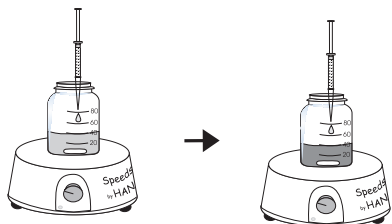
**Note:** to dose exactly 1.0 mL of the Titrant Solution reagent:

- push the plunger completely into the syringe,
- insert tip into HI 3897-0 Titrant Solution reagent,
- pull the plunger out until the lower edge of the plunger seal is on the 0 mL mark of the syringe,
- take out the syringe and clean the outside of the syringe tip. Be sure that no drops are hanging on the tip of the syringe, if so eliminate them.



- Remove the cap.
- Hold the syringe in vertical position above the bottle. Slowly add the titration solution dropwise, waiting for the solution to be stirred after each drop.
- Continue adding titration solution until the solution in the bottle changes from yellow-green to pink.

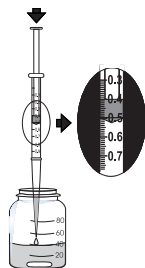
**Note:** stop adding the HI 3897-0 Titrant Solution reagent to the bottle as soon as the solution is persistently pink.



- Read the milliliters of titration solution from the syringe scale and obtain the acidity of the extra virgin olive oil sample as follow:
- If 4.6 ml of oil sample was dosed to the bottle, then the acidity is :

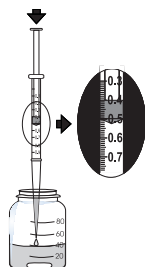
ml of titrant = % oil acidity

[i.e.: 0.5 ml = 0.5% oil acidity]



- If “w” grams of oil sample was weighted and added to the bottle, then the acidity is :

$$\frac{\text{ml} \times 4}{\text{“w” grams}} = \% \text{ oil acidity}$$



## Replacement Kit Instructions

### CAUTION!

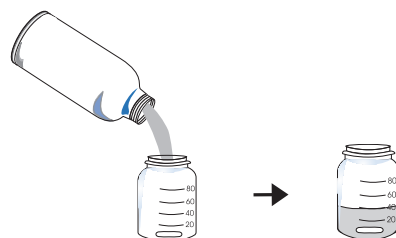


Carefully open the bottle of HI 3897-010 Organic Solvent Replacement Kit , because the bottle may be under pressure!



Store the bottle tightly closed in a cool, ventilated place.

- Transfer 40 ml of reagent from the Replacement Kit bottle to an empty Organic Solvent bottle, to the 40 ml sign.



**Nota:** the empty Organic Solvent bottle must be clean and dry.

- Add a magnetic bar and cap the bottle tightly.
- To perform a new test, proceed as described in the “Instructions”.

## Accessories

HI 3897-010	replacement kit (10 tests)
HI 740053	100 ml graduated glass bottle (10 pcs)
C215-00300	5 ml graduated syringe
HI 740142	1 ml graduated syringe
HI 740143	1 ml graduated syringe (6 pcs)
HI 740144	tips for 1 ml graduated syringe (6 pcs)
HI 180IMD	magnetic stirrer
HI 731319	magnetic bar (10 pcs)

## Bibliography

Commission Regulation (EEC) No 2568/91 and following updates.

## Health and Safety data Sheets

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