HI 84100 mini Titrator

FOR THE DETERMINATION OF FREE AND TOTAL SULFUR DIOXIDE FOR WINE ANALYSIS

HANNA® instruments

With Great Products, Come Great Results™

Why Sulfur Dioxide is important...

An important reason for adding SO_2 is to avoid oxidation. When there is oxygen around, SO_2 itself becomes oxidized before phenol compounds in the wine, and thus acts as an oxygen scavenger. Also, SO_2 suppresses the activity of enzymes that cause browning and other problems.

What is really protecting your wine is molecular SO_2. When you add SO_2, depending on circumstances, some of it immediately becomes bound. The relationship between the amount of added SO_2 and the amount of SO_2 remaining free is complex. It is clear however, that it is largely governed by the total SO_2 content of the wine. The rate of binding decreases as the free SO_2 concentration increases. The exact relationship between free and bound (total-free) SO_2 will vary from wine to wine.

Below 30-60 ppm, 33% to 50% of SO_2 addition becomes bound. What remains is called "free" and is divided in two parts. The larger and relatively ineffective free part is "bisulphite" (HSO^{3-}). The smaller part of the free is the active molecular SO_2. The amount of molecular SO_2 in your wine depends both on the level of free SO_2 present as well as pH. For instance, at pH 3.2 the amount of free SO_2 for 0.8 ppm molecular SO_2 is 22 ppm. At 3.5, you will need 43 ppm free, essentially double.

Free concentration (ppm) for 0.8 ppm molecular SO_2:

pH	3.0	3.1	3.2	3.3	3.4	3.5	3.6	3.7	3.8	3.9
Free SO_2	14	18	22	28	35	44	55	69	87	109

In most situations, 0.8 ppm molecular SO_2 during bulk storage and at bottling will provide you with adequate protection from oxidation and bacterial action. This includes prevention of malolactic bacteria as well.

It is important to remember that the amount of free SO_2 in the wine depends on 3 things: how much is added, how much was present before the addition and how much of your addition promptly becomes bound.

The level at which molecular SO_2 can be detected by human senses is about 2.0 ppm. This also is the level which is needed for maximum protection of your wine. This is particularly true in the case of sweet and most notably botrytised wines.

The HANNA HI 84100 offers the possibility to quickly and accurately test free or total SO_2 in all wines (including red).

HI 84100
mini Titrator

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- Titrator, magnetic stirrer, electrode holder & reagent holder in one compact unit
- Results in minutes
- Simple to operate

Free and Total Sulfur Dioxide

The HI 84100 is a low cost, easy to use, microprocessor-based automatic titrator that benefits from HANNA's years of experience as a manufacturer of analytical instruments.

The HI 84100 has a simple and reliable peristaltic pump to ensure accurate dosing and repeatability. By performing pump calibration with the provided HANNA standards, instrument accuracy is assured.

This instrument is supplied with a pre-programmed analysis method designed for free and total sulfur dioxide measurements on wine samples. The instrument features a powerful and effective built-in algorithm to analyze the shape of the electrode response curve and to determine the reaction completion. This algorithm automizes the analysis and makes all necessary calculations. The HI 84100's interface is clean and simple.

By simply pressing the START/STOP button, the instrument will automatically make the titration up to the equivalence point. The result is immediately displayed in convenient units, then the instrument is ready for another titration.

Affordable for all sized wineries

1. Peristaltic Pump and Tube Set
2. ORP Electrode
3. Electrode Holder
4. Mini Stirrer
5. Touch Keypad
6. 50 & 20 mL Beakers
7. Refill Solution
8. Scissors
9. 1 mL Syringe
10. Wine Deposit Solution Sachets
11. Wine Stain Solution Sachets
12. Plastic Dropper
13. Stabilizer

- **Stability Indicator**
- **Calibration Messages**
- **Secondary Display**

Pre-programmed Free & Total Sulfur Dioxide analysis method for wine samples!

14. Acid Reagent
15. Standard Solution
16. Titrant Solution
17. Alkaline Solution
18. Large LCD Display
19. Titrant Holder

Also Available from **HANNA**

TITRATABLE TOTAL ACIDITY mini Titrator

HI 84102 for the Determination of Titratable Total Acidity in Wine

TARTARIC ACID Photometer

HI 83748 for the Determination of Tartaric Acid in Wine

TOTAL PHENOLS & COLOR Photometer

HI 83742 for the Determination of Total Phenols & Color in Wine

COPPER Photometer

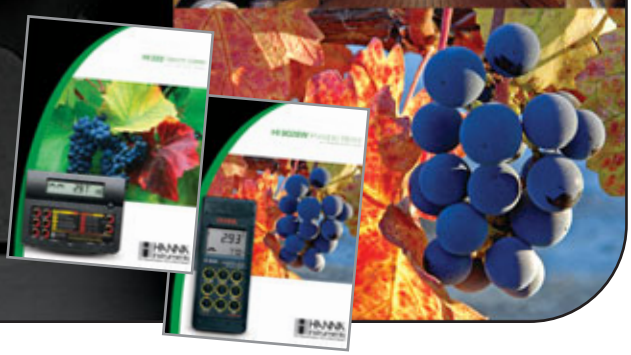
HI 83740 for the Determination of Copper in Wine

IRON Photometer

HI 83741 for the Determination of Iron in Wine

pH & TEMPERATURE Bench & Portable Meters

HI 222 & HI 9026W pH & Temperature in Wine



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Ordering Information

HI 84100 is supplied complete with reagent set for 20 titrations, (2) 50 mL beakers, (2) 20 mL beakers, scissors, tube set with cap, ORP electrode, stir bar, power cable, 30 mL bottle of refill solution, 1 mL syringe, (2) wine deposits cleaning solution sachets, (2) wine stain cleaning solution sachets and instruction manual.

Specifications	HI 84100 mini Titrator
Range	0 to 400 ppm of SO_2
Resolution	1 ppm
Accuracy	5% of reading
Method	Ripper titrimetric method
Principle	Equivelance point redox titration
Sample Volume	50 mL
ORP electrode	HI 3148B (included)
Pump Volume	0.5 mL/min
Stirring Speed	1500 rpm
Environment	0 to 50°C (32 to 122°F); max 95% RH non-condensing
Power Supply	110V/60 Hz; 10VA
Dimensions	208 x 214 x 163 mm (8.2 x 8.4 x 6.4") (with beaker)
Weight	2200 g (77.6 oz.)

Accessories

HI 70300L Electrode storage solution (500 mL)
HI 70635 Cleaning solution for wine deposits (500 mL)
HI 70636 Cleaning solution for wine stains (500 mL)
HI 7082 Electrode filling solution (4 x 30 mL)
HI 84100-50 Titrant solution (110 mL)
HI 84100-51 Alkaline reagent (500 mL)
HI 84100-52 Acid reagent for total SO_2 determination (500 mL)
HI 84100-53 Acid reagent for free SO_2 determination (500 mL)
HI 84100-54 Stabilizer reagent (25 pcs.)
HI 84100-55 Calibration standard (500 mL)
HI 3148B ORP probe with shorter cable
HI 70483T Tube set with cap for titrant bottle and tip
HI 731316 Stir bar (5 pcs)
HI 740036P Beaker 50 mL (10 pcs.)
HI 740037P Beaker 20 mL (10 pcs.)
HI 740198 Power cable

2 year LIMITED WARRANTY

Wolf Laboratories Limited

www.wolflabs.co.uk

Wolflabs

Tel: 01759 301142 Fax:01759 301143 sales@wolflabs.co.uk

Use the above details to contact us if this literature doesn't answer all your questions.

Pricing on any accessories shown can be found by keying the part number into the search box on our website.

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct. If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.