Vinmetrica SC-50™: Quick Guide

Set-Up:

For the first time set up, please see the 'Setup' Page of the SC-50 manual. Make sure you have prepared your Reaction vials as directed there.

Procedure:

1. Take out reagents and Reaction vials needed for assay from refrigerator or freezer and allow to come to room temperature. Re-mix each reagent before use. You may put these reagents in a room temperature water bath.
2. Measure a 10 mL wine sample and dispense into the 100 mL plastic beaker
3. Place the wine sample in microwave and at a medium power get the wine sample to gently boil for 60 seconds
4. Let wine sample cool to room temperature. Pour the sample into the 15 mL conical tube. Add DI H_2O to restore the volume to 10.0 mL. Pour the sample back into the 100mL beaker. **Be sure the restored sample is completely cooled to room temperature.**
5. Add 5 drops (150 µL) of the Boost juice into the 10 mL boiled wine sample. Mix gently.
6. Disconnect the vial insertion assembly from the SC-55 by unscrewing the luer lock connector on the bottom of the instrument. (Figure 1.) The disconnected vial insertion assembly will be used in the next step.
7. **[Reminder: be sure the wine sample is at room temperature and not warm to the touch!]** Pipette exactly 3.0 mL of the wine sample from step 5 into the reaction vial. Immediately cap the vial tightly, then quickly stand the vial upright and puncture the septum of the reaction vial for about 3 seconds with the disconnected vial insertion assembly (**see Figures 2 and 3**). This step equilibrates the vial's internal pressure to ambient pressure, i.e., it "zeroes" the initial pressure.

Figure 1. Unscrew the Luer Lock connector.

8. Repeat step 7 for each sample or Malic Acid Standard to be analyzed.
9. Shake all vials gently but thoroughly for approximately 10 seconds.
10. Allow samples to incubate at room temperature for 30 minutes. While incubation is occurring, gently shake the vials at the 10 minute and 20 minute mark.
11. Turn on the SC-55. Recommended units are **kPa**; change with MODE button if needed. Reconnect the vial insertion assembly and secure it.
12. Shake the vial once more for 10 seconds and then proceed to the next step immediately. DO NOT remove the cap of the vial.

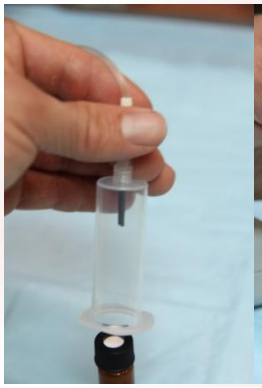

Figure 2.

Figure 3.

13. **[Note: Make sure all the parts of the vial insertion assembly are secured tightly before proceeding.]** Place reaction vial upright on your work surface. Position the opening of the vial insertion assembly over the vial. Gently push the assembly down onto the vial as far as it will go and hold it in place (i.e. so that the assembly's rubber-sheathed needle is inserted into the vial's septum); **see Figures 2 and 3**.
14. Record the reading on the instrument.
15. Refer to the manual for data interpretation.

Cap and seal all reagents and store in refrigerator or freezer (see manual).

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Malic Acid Concentration Calculation

1. You should now have three values **a**, **b**, and **c,** in order to calculate the concentration of malic acid:

a = Wine sample results

b = Blank Vial result

c = Standard Vial result for standard concentration **S** (e.g., 0.10 g/L)

2. The malic acid (MA) content, in grams per liter, is given by

$$\mathbf{MA,\ g/L = S * (a - b)/(c - b)}$$

(i.e. subtract **b** from **a**, subtract **b** from **c**, divide the first difference by the second, then multiply that result by **S**, the concentration of your standard (usually 0.10 g/L)

Example: For a red wine: (**a**) was 0.27, (**b**) was 0.11, and (**c**) was 0.8 for a 0.10 g/L standard, (i.e., **S** was 0.10). So the malic acid concentration was

$$\mathbf{0.10 \times (0.27 - 0.11)/(0.8 - 0.11) = 0.02\ g/L\ malic\ acid}$$

Having determined the concentration in g/L, you should use Table 1 as a rough guideline for status of MLF in your wine.

Table 1

Malic Acid Concentration, g/L	MLF status
Above 1	Not started or just started
0.4 – 1.0	Incomplete, probably started
0.1 – 0.4	Progressing well
0.05 – 0.1	Nearly complete, probably OK
Below 0.05	Complete