

# Cryoscope 4D3

## Instrument Calibration

- 1/ At “Cryoscope Ready” press **CALIB**.
- 2/ Load the tube containing 2.5ml +/- 0.1ml calibration standard (-408m°C) into the freezing chamber and press **START**.
- 3/ Continue loading and testing the -408m°C calibration standard as prompted.
- 4/ After the sixth measurement the instrument will prompt for the second calibration standard to be loaded (-600m°C).
- 5/ Repeat for a total of six times as prompted.
- 6/ The calibration will not be changed until six calibration tests have been acceptably completed at both calibration levels.
- 7/ “**Calibration Complete**” will be displayed after a successful calibration.

PLEASE NOTE: If all previous calibration data is lost and “**Calibration Needed**” is displayed carefully follow the displayed prompts as a slightly different sequence needs to be followed.

## 512 Check

- 1/ At the beginning of a series of determinations or every hour during a continuous run of determinations a 512 check should be run.
- 2/ Take the 512 standard solution and measure it as for a sample.
- 3/ Run a second 512 standard solution. These two consecutive readings must not differ by more than 1m°C. If they do differ by more than 1m°C continue testing until the last two tests are within 1m°C of each other.
- 4/ If the average of these two results is within 2m°C of the specified result (512m°C) continue testing. If not, recalibrate cryoscope.

## Sample Analysis

- 1/ Remove the sample tube from the freezing chamber and gently wipe the probe and stir wire with a soft, lint free tissue dampened with distilled water.
- 2/ Do not bend the probe or the wire. The probe is fragile and if the glass thermistor is broken the cryoscope won't work correctly.
- 3/ Pipette or measure 2.5ml of the sample into a cryoscope tube and place the tube into the freezing chamber.
- 4/ If “ID #” has been enabled the operator will be prompted for an ID number. Enter a number (or leave blank) and press ENTER.
- 5/ Press START.
- 6/ The rest of the test is automatic.
- 7/ When the display reads “Freezing Pt xxx mC” the test is complete and the result recorded.
- 8/ Always wipe the probe/stir wire and the top of the freezing chamber with a soft, clean and dry paper tissue after each test to avoid contamination of the next sample and having contaminated material dry on the probe.
- 9/ Leave an empty sample tube in the freezing chamber to help avoid items falling in the freezing chamber.

## Repeatability Tips

- 1/ Sample tubes must be clean. They should be washed in hot water with non-ionic detergent, rinsed in distilled water and thoroughly dried before use.
- 2/ To avoid contamination and evaporation cover all samples not immediately being tested.
- 3/ Use consistent sample size (2.5ml) for calibrations, checks and milk.
- 4/ The first reading in any given period of operation may be slightly off because of temperature conditioning. Ignore the first reading performed after the instrument has been idle.
- 5/ Ensure bath liquid reservoir bottle is rinsed out when refilling is required.