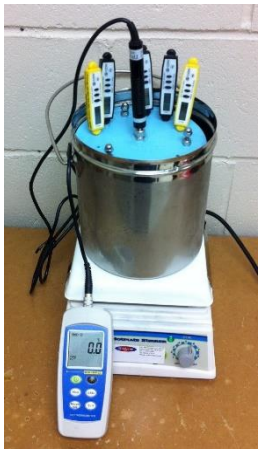
Scigiene Calibrator Advantages



The Scigiene thermometer calibrators are special apparatus used for checking, calibrating and certifying pocket thermometers to within ±0.5°C of a certified reference thermometer (0.1°C accurate).

Many labs are using the process of stirring a cup or beaker with crushed ice and water to do calibrations or temperature validations. While this might work, it also just as frequently does not. The reasons for this are quite simple:

- Pure ice water stirred well, is 0°C at sea level. However, if you change altitude or have impurities in the water, the ice point changes.
- If the probe tips are in contact with the ice and not just the water, they may be reading the ice temperature or an average of both! Ice from your freezer is well below 0°C.
- The probes themselves may have varying response times of 5 to 30 seconds depending on design. If the temperature is not 100% stable, they may not read the same, but still be accurate.
- If the probes are in contact with the container wall (>0°C) this will also throw the temperature out.
- Using a calibration bath that is stable in temperature is not easy without the correct equipment. Ice baths can have a variance of over ± 2.0°C.

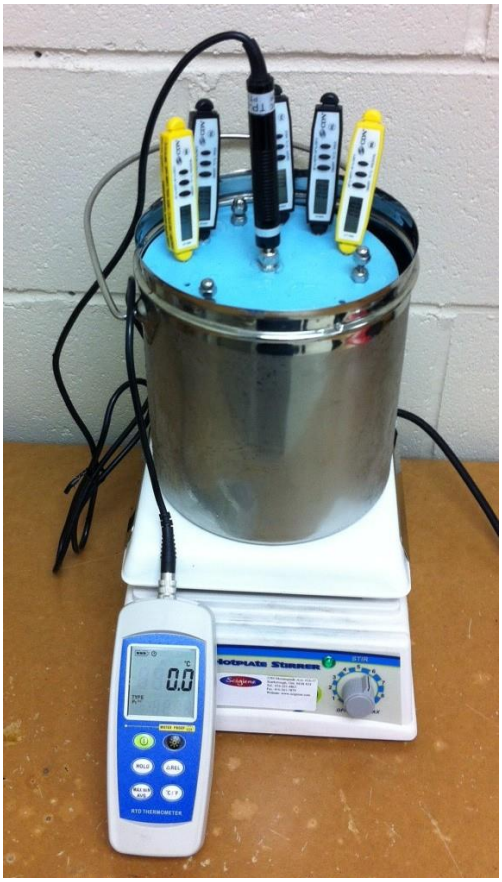
So why has the ice bath method been so universally adopted? At one time we all used dial thermometers. These have a stated accuracy of roughly ± 2.0°C, and using the standard crushed ice method and following exact procedures you were able to verify and calibrate them.

But industry standards have risen and most companies have written into their HACCP plans the need to use and calibrate to +/-0.5C or better. The fact is that most digital pocket thermometers are not even that accurate and if you press the CAL feature in an ice bath that is not precise you can end up de-calibrating them.

Can it be done? Yes, but the procedure using standard stirrers and beakers and clamps is painstaking to make an understatement.

At Scigiene we have studied this extensively and developed the Scigiene Calibrator that allows simplified, repeatable and accurate ice bath tests.

SCIGICAL-9 Calibrator Instructions



Required Equipment for 0°C Calibration:

- Scigiene Calibration bracket
- NIST Traceable Digital Reference Thermometer with at least 2X
- as accurate as the thermometers to be tested (Scigiene RD0370R RTD Reference Thermometer)
- Hot Plate with temperature control and separate magnetic stirrer control
- Scigiene Large Magnetic Stir Bar
- Scigiene Stainless Steel Calibration Bath
- At least 1L of crushed ice
- 1L Cold Water
- Salt

Procedure:

1. Place the Scigiene Stainless Steel Calibration bath onto the hot plate/stirrer and insert the supplied stir bar.

2. Fill the Scigiene Stainless Steel Calibration bath ½ full with CRUSHED ice and add cold water to about 1" from the top rim of the container with cold water.

3. Start stirrer and periodically check ice bath with your reference thermometer. Once it reaches close to 0°C it will stabilize. Begin to slowly add salt until the bath drops to precisely 0°C.

4. Install the RD0370R reference probe and pocket thermometer(s) to be tested/calibrated into the Scigiene Calibration bracket and adjust reference probe to the same depth as the pocket probe tips. The compression fitting can be finger tightened to hold the reference probe at the correct height.

5. Gently insert the Scigiene Calibration bracket into the Scigiene Stainless Steel Calibration Bath shaking it gently to ensure the crushed ice is not trapped under the lower shelf. If you are using longer probes, these will rest on the lower shelf and you may want to add them after installation of the rack for ease of use.

6. Once the rack is in place, leave the assembly running for several minutes to stabilize the temperature again.

7. Once the reference reading is stable at 0.0°C for at least 30 seconds, you can then check the pocket thermometers and if out of specification, you can press the calibration button (if available) to precisely calibrate them at 0°C.

Required Equipment for 100°C Calibration:

- Scigiene Calibration bracket
- NIST Traceable Digital Reference Thermometer with at least 2X as accurate as the thermometers be tested (Scigiene RD0370 RTD Reference Thermometer)
- Hot Plate with temperature control and separate magnetic stirrer control
- Scigiene Large Magnetic Stir Bar
- Scigiene Stainless Steel Calibration bath
- At least 2L of boiling water (from a kettle)

Procedure:

1. Place the Scigiene Stainless Steel Calibration bath onto hot plate/stirrer and insert stir bar.

2. Fill container boiling water from kettle to speed up the process to about 1" from the top of the container with the hot water.

3. Turn hotplate temperature gage to maximum.

4. Start stirrer and periodically check the boiling bath with your reference thermometer. Once it reaches 100°C or close to 100°C, it will stabilize.

5. Install the RD0370R reference probe and pocket thermometer to be tested/calibrated into the Scigiene Calibration bracket and adjust reference probe to the same depth as the pocket thermometers probe tips. The compression fitting can be finger tightened to hold the reference probe at the correct height.

6. Gently insert the Scigiene Calibration bracket into the Scigiene Stainless Steel Calibration hot water bath.

7. Once the rack is in place, leave the assembly running for several minutes to stabilize the temperature again.

8. Once the reference reading is stable at 100°C or your boiling point for at least 30 seconds, you can then check the pocket thermometers and if out, you can press the calibration button (if available) to precisely calibrate them at 100°C.

SPECIAL NOTE our Scigiene Calibration bracket has a solid top plate to minimize exposure to steam. Pocket thermometers do not have cold junction compensation which can lead to large temperature variations due to heating of the electronics. Also, pocket thermometers that are waterproof may not necessarily be immune to steam or high temperatures. The heat may loosen the glue holding the faceplate on or might affect the electronics. So, a quick procedure is still advised.

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