

REDACTED

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Laboratory Temperature Sensor Calibration

(mo/yr)

Revisions		Rev:			
Letter	E.O. Number - Description	Date			
Used On:	Contract#:	Your Company Name			
Prepared By:					
Originator:					
Your Dept:		LABORATORY PROCEDURE			
Your Dept:					
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Your Logo

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Table 1: Boiling-Point of Water at Barometric Pressures 6

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1.0 Purpose of Process

Use the physical constants of the freezing and boiling point of distilled or deionized water to determine the accuracy of temperature sensors.

2.0 Process Definition

Determine the precise temperature of boiling water at various barometric pressures and use the bath as a calibration source; similarly, use the freezing point of water to serve as a 0°C source.

3.0 Equipment

- 3.1 [Redacted]
- 3.2 [Redacted]
- 3.3 [Redacted]

4.0 Materials

- 4.1 [Redacted]

5.0 Preparations

The hot plate must [Redacted].

6.0 Document Review

- 6.1 Calibration Policies and Procedure

7.0 Safety Requirements

- 7.1 Safety Equipment

The technician performing the analysis should [Redacted].

- 7.2 Safety Precautions

If any of the glassware breaks during the procedure, the technician [Redacted].

8.0 Technician Responsibilities

The technician should understand how [Redacted].

The technician should understand [Redacted].

[Redacted]. The technician is responsible for [Redacted].

[Redacted] The technician should have knowledge of the following documents: Calibration Policies and Procedures

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9.0 Process Controls

The analysis should [redacted] be approved [redacted]

[redacted] All of the required data [redacted]. The lab supervisor [redacted] should [redacted]

10.0 Prepare 100°C±0.1°C Boiling-Point Physical Constant

10.1 Determine the Uncorrected Barometric Pressure for the Boiling-Point Constant

[redacted] The barometric pressure [redacted], which affects [redacted] water and requires [redacted]

10.2 Approximate the Boiling Point of Water

Using Table 1, find the boiling point of water based upon barometric pressure.

Example:

[redacted]

The boiling point of water is between [redacted]

10.3 Calculate the Boiling Point of Water

From Table 1:

[redacted] (in this case, there is a change in temperature of [redacted] for every [redacted])

Calculate the difference between the known barometric pressure and [redacted]

[redacted]:
[redacted]
[redacted]
[redacted] is the [redacted] at a barometric pressure of [redacted]

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10.3 Boil Water

Place a stir bar [REDACTED].

Heat [REDACTED].

10.4 Determine Accuracy of Temperature Sensor

Immerse the temperature sensor [REDACTED].

[REDACTED]. Wait a sufficient time for the sensor [REDACTED].

[REDACTED]. Calculate and record the difference between the [REDACTED].

11.0 Prepare 0°C±0.1°C Ice-Point Physical Constant

Note: Barometric pressure [REDACTED]. This ice-bath must not be construed as a precision triple-point of water calibration cell with 0.01°C accuracy as described by the International Temperature Scale of 1990 (ITS-90).

- 11.1 [REDACTED].
- 11.2 [REDACTED].
- 11.3 [REDACTED].
- 11.4 [REDACTED].
- 11.5 [REDACTED] inutes.
- 11.6 [REDACTED].

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