

TRIPLE POINT OF WATER CELL

INTRODUCTION

Triple point of water is the most important defining thermometric fixed point used in the calibration of thermometers. Triple point of water cell is used to create a thermal equilibrium between solid, liquid and vapor phases are independent of ambient pressure. This thermal equilibrium occurs at 273.16 Kelvin or 0.01 degree Celsius. TPW cell is cylindrical borosilicate glass filled with pure water. The water in the cell is high purity and gas free and have isotropic composition.

TPW IN THERMAL CALIBRATION

Thermal Calibration lab has facility for Fixed point calibration of SPRTs, HTPRTs and standard thermocouples probe. Fixed point calibration are used for primary temperature standard in thermal calibration to achieve the lowest possible uncertainties. Triple point of water cell may be the most commonly used type of fixed point and it is used in ITS-90 calibration. Water can exist as a solid, liquid and vapor at 0.01 deg C.

TEMPESENS TPW CELL : Tempsens TPW cells are manufactured with high quality borosilicate glass in two sizes mini & Standard. Special procedure for cleaning, ultra pure water with special degassing technique is used and the cell is flame sealed.

KEY FEATURES

- Constructed of high-quality, specially treated borosilicate glass.
- Good uncertainty.
- Center well constructed.



REPRODUCIBILITY : The equilibrium temperature of a cell will repeat, whenever it will be produce is in the range of 2 mk.

STABILITY : When equilibrium is reached the temperature of inner ice mantle will remain constant within 1 mk remain preserved for long time.

SPECIFICATIONS

Uncertainty : 2mK

Reproducibility : <1mK

Dimensions

OD - 32 mm

Total Length - 165mm

Material : Borosilicate Glass

Immersion Profile

Depth - 150 mm

Insert Construction - 1 hole of 8 mm dia

Water Used : 99.999% Pure distilled water

TPW Cell Type : Mini

MAINTENANCE APPARATUS -15/110 FOR TPW CELL

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DRY BLOCK FURNACE : Dry block offers medium temperature range from -15°C to 110°C. It is a highly stable standard temperature source for calibrating RTD/thermocouples. It has peltier elements to generate stable temperature in the well. The temperature of the calibrator is set and controlled by a self tuned PID controller with automatic super fine adjustment. Self tuned PID controller used for increased or decreased temperature.

KEY FEATURES

- High Stability
- PC Interfacing
- Simple to use & Cost effective portability

MAINTENANCE APPARATUS

Tempens made maintenance dry block is best fitted for tpw cells. They are carefully designed to give the required stability and uniformity and provide sufficient immersion depth for TPW cell. It can be also use as dry block calibrator using equalizing block for comparison calibration.

EQUIPMENTS USED IN REALIZATION

TPW Mini Cell

Platinum Resistance Thermometer (PRT)

Measuring Equipment

ACCESSORIES

- Master RTD Model No. TPRT - A - 300
- Carry case
- Operational Manual
- Insertion Block Dia 32mm x 180mm long with 4 x 6mm hole of 150 mm insertion depth



SPECIFICATIONS OF CALSYS -15/110

- **Temperature Range :** -15/110
- **Temperature Resolution :** 0.1°C
- **Controlling Sensor :** RTD
- **Power Requirement :** 230 VAC
- **Weight :** 14 kg
- **Stability :** 0.05°C
- **Time to reach min. Temp. :** 30Min.
- **Method of control :** Digital self tuned PID controller
- **Dimension :** 430(H) x 170(W) x 188(D) mm
- **Insert Construction :** 33mm Dia x 220mm long for dry block