

5947 Mini Metal-Cased Aluminum Cell

Technical Data

The 5947 Mini Metal-Cased Aluminum Cell completes Hart's set of metal-cased fixed-point cells that spans from 29.7646 °C to 660.323 °C. These aluminum cells meet the requirements of the ITS-90 and also overcome the fragility of the classic quartz fixed-point cells. If you're calibrating working SPRTs, PRTs, or thermocouples, and want the lower uncertainty of a fixed-point calibration, these cells will give it to you.

Low uncertainty

The 5947 Mini Metal-Cased Aluminum Cell's 156 mm (6.14 in) immersion depth, 7.8 mm (0.31 in) reentrant well diameter, and ultra pure (> 99.9999 %) metal samples provide uncertainties of just ± 2 mK, which even exceeds the performance of mini quartz aluminum cells. When used in a 9114 Freeze-Point Furnace, plateaus that last over 20 hours can be achieved. In a 9260 furnace, the cell can easily provide a long enough plateau for a full day's work, with an uncertainty due to the realization of just ± 4 mK.

Faster than quartz cells

Hart's 5947 cells in a large furnace can achieve nearly the same uncertainty levels as traditional quartz fixed-point cells, but the 5947 mini cells in combination with Hart's 9260 cost less, work faster, and are easier to use.

Less fragile than quartz

Unlike the quartz-encased cells, our stainless steel-encased aluminum cells do not require hand delivery because they are much less susceptible to accidental breakage.



Practical and precise

As with other fixed-point cells, these mini metal-cased cells are great to have in the lab to help maintain your internal standards, because fixed-point cells have very reproducible results with low uncertainties. If you're doing comparison calibrations with SPRTs, then you know the importance of occasionally checking them at the triple point of water. As an added measure, two SPRTs with readings that do not agree at higher temperatures can be checked easily and definitively in a metal fixed-point cell.

To enhance the practicality of the mini fixed-point cells, Professor Xumo Li studied the impact of using a simple but effective melting procedure for fixed-point cells. His paper, "The Comparison

- ± 2 mK expanded uncertainty
- Faster calibrations and less fragile casing
- Less expensive
- No hand-carry delivery necessary

Between the Freezing Point and Melting Point of Tin," demonstrates just how effective this method can be and may be downloaded from our website at www.hartscientific.com. If you're looking for high-level mini fixed-point cell training, be sure to ask us about options and availability.

Specifications

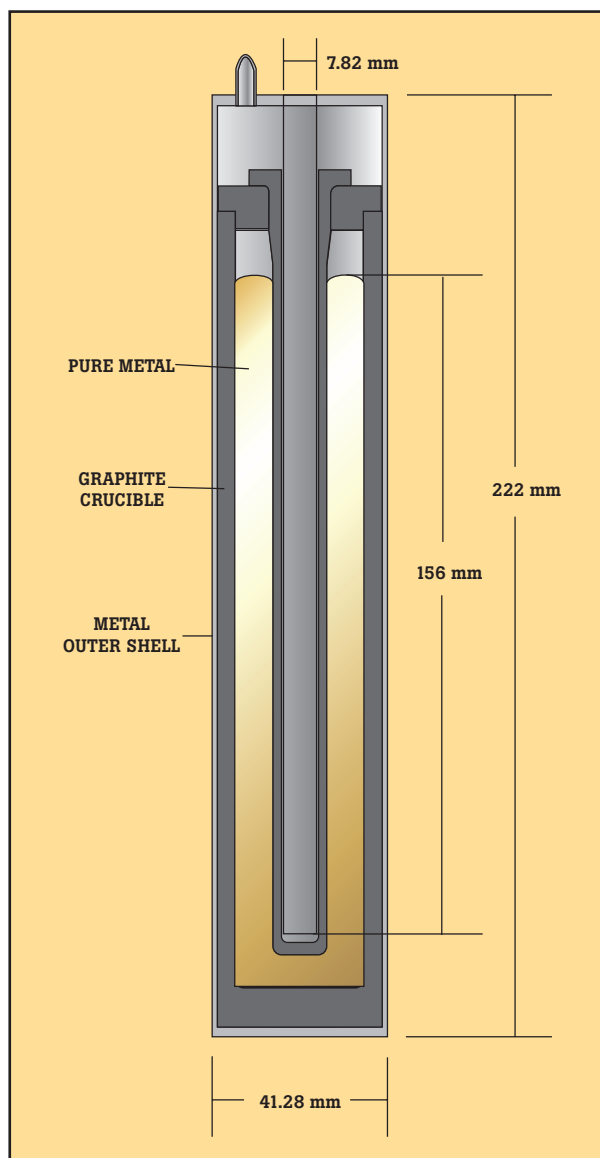
Temperature	660.323 °C
Expected depression from ITS-90	0.6 mK
Uncertainty, Cell Only¹	2 mK
Maintenance Apparatus	9114, 9115A, 9260
Uncertainty, Simple Realization¹	4 mK
Metal Purity	> 99.9999 %
Outside Diameter	41.3 mm
Inside Diameter	7.8 mm
Total Cell Height	222 mm
Immersion Depth²	156 mm

¹"Cell Only" refers to the expanded uncertainty of the cell when realized by traditional methods and maintained using traditional maintenance devices (k=2). "Simple Realization" refers to the expanded uncertainty of the cell when realized using practical methods (melting points instead of freezing points) and maintained using Hart's 9260 mini fixed-point cell furnace (k=2).

²Distance from the bottom of the central well to the surface of the pure metal.



Mini cells realize faster inside a 9260 Mini Fixed-Point Furnace.



The ± 2 mK 5947 has a stainless steel casing that encloses the graphite and pure metal inside the cell.

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Ordering Information

Model

5947 Mini Metal-Cased Aluminum Cell

Maintenance Apparatus

9114 Metrology Furnace (includes Cell Support Container)

9115A Sodium Heat Pipe Furnace (includes Cell Support Container)

9260 Mini Fixed-Point Furnace

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