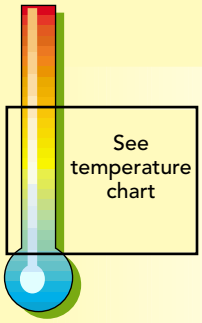
Slim Fixed Point Cells

Proven Quality



The International Temperature Scale of 1990 applies World-wide; it includes specified fixed points - fundamental constants of nature. The majority of which relate to the freezing point of a pure substance, e.g. Pure Aluminium freezes at 660.3230°C. These standards are generally kept by Primary and National Laboratories. Isotech's Databook 1 includes these Primary Standards and associated equipment. Databook 2 includes a range of more affordable fixed points that are used in Secondary Laboratories and for extreme accuracy industrial calibration.

Many of the products featured in this Databook can be used with Fixed Point Cells enabling a modestly conceived industrial laboratory to be upgraded if and as the requirements arise. These Fixed Points are called *Slim Cells* because they are somewhat smaller than the cells normally used for Primary Standards.

These more economic cells are available in a number of constructions including metal clad as well as quartz glass clad cells. The metal cells are pure to 6N, 99.9999% pure and are sealed with 99.9999% pure argon at one atmosphere.

The Water Triple Point is perhaps the most important of the fixed points and there is a choice of two models, the smaller for the ISOCAL-6 Range, and the larger cell for the Oceanus-6.

The table opposite shows the Slim Cells available for the products in this databook. For further information relating to fixed point calibration please refer to Databook 1, Databook 2 and visit our web-site.

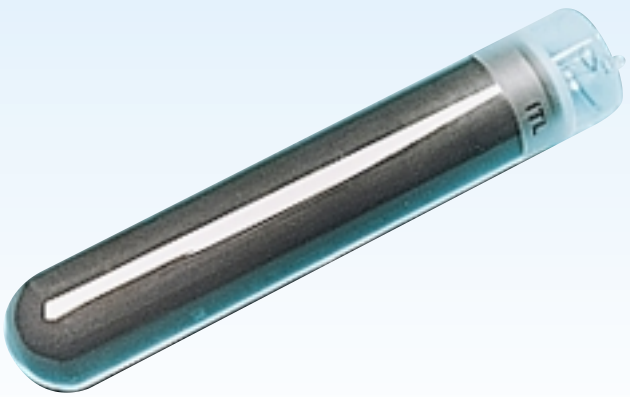
Isotech's Slim Fixed Point Cells can be used to calibrate temperature sensors, either as the metal within them melts, or as it freezes. Typically, says CCT/96-8, a 6N pure cell will melt over 80% of its plateau within ±1mK. Exceptionally Isotech's Gallium Cell will melt over ±0.2mK.

Allowance must be made for the sensor being calibrated, sensors with short sensing lengths will add no additional errors to the above but other types with longer sensing lengths will add additional uncertainties. An article is available from Isotech detailing stem conduction errors, please ask for your copy, free with our compliments.

Two examples showing the cell/apparatus/sensor performance are illustrated on the facing page.

Key Features

- **Affordable solution for extreme accuracy Industrial calibration**
- **6N (99.9999%) purity metals**
- **Sealed with 6N (99.9999%) pure argon at the freeze temperature**
- **Smaller versions of ITS-90 optimal Fixed Points**
- **Ideal for shorter sensors**
- **10 years of proven history of use in many laboratories throughout the World**
- **Each cell comes complete with all necessary accessories to enable it to be fitted into its appropriate Isotech apparatus**



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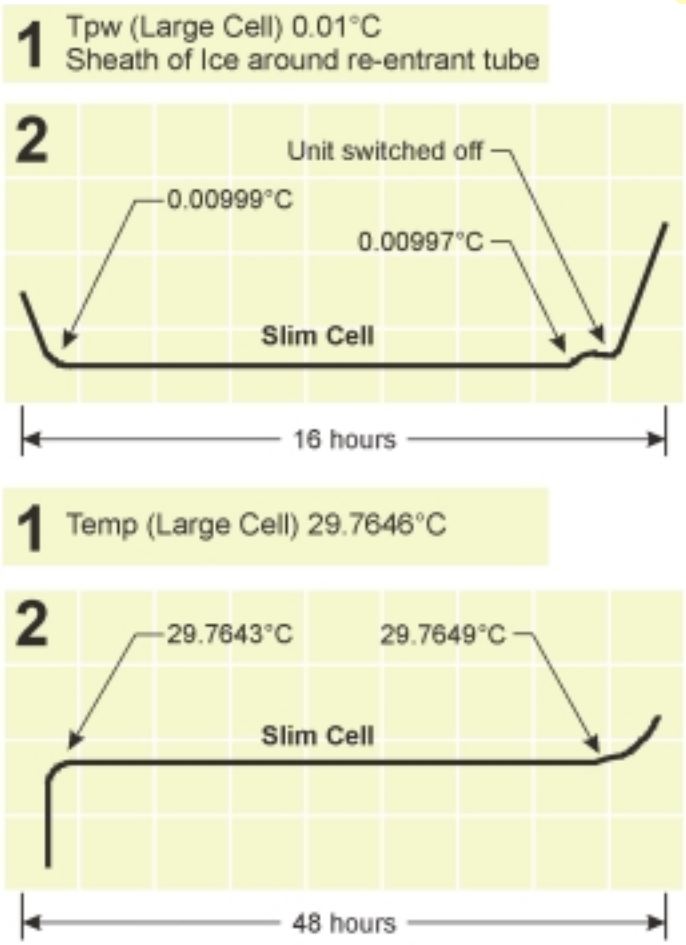

The graph shows a Standard Platinum Resistance Thermometer's temperature firstly as measured in a 2 week old large Water Triple Point Cell and then as measured in a Slim Cell placed in an Isotech metal block bath such as Europa-6 or Venus 2140. After 16 hours the apparatus was switched off (we wanted to go home).

The graph shows a Standard Platinum Resistance Thermometer's temperature firstly as measured in a large 7N pure Gallium Cell and then as recorded in a Slim Gallium Cell placed in an Isotech metal block bath such as Europa-6 or Venus 2140.

Cell	*Temperature ITS-90 Value (°C)*	*Length Immersed (mm) (1) (2)*	*Expected depression from ITS-90 (mK) (3)*	*Type*	*Apparatus*	*Model Number*
Mercury	-38.8344°C	120	0.04	Metal Clad	Europa-6	17724 Slim
Water	0.01°C	110	0.1	Glass	Europa-6 Venus 2140	D8
Water	0.01°C	260	0.04	Glass	Oceanus-6	C12
Gallium	29.7646°C	250	0.04	Metal Clad	Oceanus-6	17401
Gallium	29.7646°C	120	0.04	Metal Clad	Europa-6 Venus 2140 Calisto 2250	17401 Slim
Indium	156.5985°C	130	0.5	Metal Clad	Medusa	17668M Slim
Indium (4)	156.5985°C	110	0.5	Metal Clad	Calisto 2250	17156M Slim
Tin	231.928°C	130	0.3	Metal Clad	Medusa	17669M Slim
Zinc	419.527°C	130	0.5	Metal Clad	Medusa	17671M Slim
Aluminium	660.323°C	130	0.7	Metal Clad	Oberon	17672M Slim
Silver	961.78°C	130	1.1	Quartz Clad	Oberon	17673 Slim
Gold	1064.78°C	130	2	Quartz Clad	See Databook 2 Model 469	17675 Slim
Copper	1084.62°C	130	2	Quartz Clad	See Databook 2 Model 469	17674 Slim

(1) Depth from metal surface to the bottom of the re-entrant quartz tube
(2) Immersion errors depend on total depth of immersion in the apparatus which for Oceanus, Medusa and Oberon is 300mm, for Europa is 160mm.
Please ask for a free article titled 'Depth of Immersion Errors' for more details.
(3) Assuming the law of Dilute Solutions (ref. CCT/96-8 Page 6). The re-entrant tube in all the above cells is at least 8mm inside diameter.
(4) This cell is smaller and fits into the Calisto from the Isocal-6 range, metal clad.

How to Order Slim Cells
Please state Type and Model Number