

Quartz Clad Slim Fixed Point Cells

6N Quality

Isotech's 6N Quality Quartz Clad Slim Cells have been in constant use for more than ten years and have a proven record of successful use in many laboratories World-wide.

For the Millennium we have automated most of the Slim Fixed Point Cells apparatus so that untrained personnel can have the ITS-90 values available all day, each and every day. An article from Isotech explains this philosophy in detail, please ask for a copy.

The Cells themselves are made from the highest quality graphite and quartz glass and are sealed with 1 atmosphere of 6N (99.9999%) pure argon at the freeze temperature. The metals are also 6N purity to ensure the most accurate realisation of ITS-90.

The Cells can be expected to realise the ITS-90 according to the depressions listed overleaf (CCT/96-8 Page 6).

However to obtain these uncertainties expensive apparatus such as that described in databook 1 is required.

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 $\pm 1\text{mK}$. Exceptionally Isotech's Gallium Cell will melt over $\pm 0.2\text{mK}$.

The purpose of Slim Cells is to calibrate shorter sensors, and so large apparatus is inappropriate. A Secondary Laboratory needs easy-to-use, economically priced apparatus which needs to be smaller and bench mounted.

By using our beautiful Slim Cells on their melting curve the time spent in melting the cell in order to create the freeze plateaux is avoided.

Since 1991 Isotech has produced simple-to-use apparatus for Slim Cells, Gallium, Indium, Tin, Zinc, Aluminium, Silver and Copper.

Our apparatus is now automated so that each Cell is available on its melt curve for the complete working day and during the night the apparatus re-freezes the Cell ready to re-melt it the next day. The operator just has to check, using the in-built indicator, that the Cell is on the plateau before using the Cell to calibrate sensors. The more sensors calibrated, the longer the melting curve will last, as each sensor re-freezes a little of the melting cell.

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. A free article is available from Isotech detailing stem conduction errors, please ask for your free copy.

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

Quartz Clad Slim Fixed Point Cells are available with a traceable certificate, or UKAS Certificate at an additional cost, see databook 5.

Options

510-05-00	Inconel Basket including insulators for use with Medusa 510
426-04-00	Inconel Basket including insulators for use with Oberon 426

How to Order

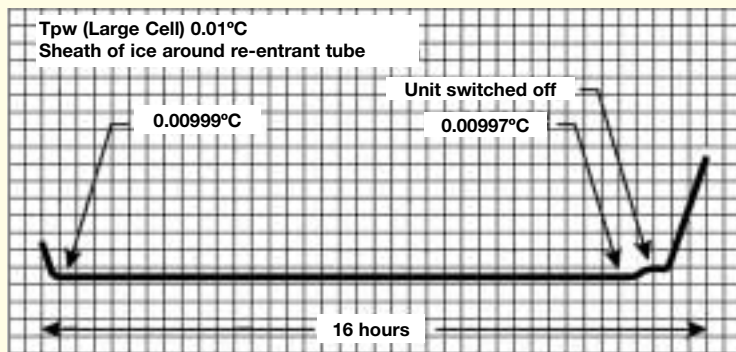
ITL M 17401 Gallium Metal Clad Slim Cell
ITL M 17668 Indium Quartz Clad Slim Cell
ITL M 17669 Tin Quartz Clad Slim Cell
ITL M 17671 Zinc Quartz Clad Slim Cell
ITL M 17672 Aluminium Quartz Clad Slim Cell
ITL M 17673 Silver Quartz Clad Slim Cell
ITL M 17674 Copper Quartz Clad Slim Cell
ITL M 17675 Gold Quartz Clad Slim Cell

A Slim Fixed Point Cell

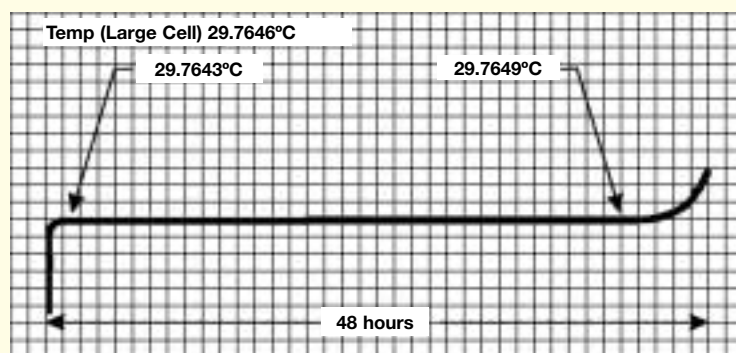


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The graph shows a Standard Platinum Resistance Thermometer's temperature firstly as measured in a 2 week old large Water Triple Point Cell and then as measured in a Slim Cell placed in an Isotech metal block bath such as Europa-6 or Venus 2140. After 16 hours the apparatus was switched off, the cell was still on its plateau.



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	Apparatus
Mercury	-38.8344°C	130	0.04	Europa-6
		220	0.04	Oceanus-6
Water	0.01°C	110	0.1	Europa-6
		260	0.04	Oceanus-6
Gallium	29.7646°C	120	0.04	Europa-6
		120	0.04	Oceanus-6
Indium	156.5985°C	130	0.5	Medusa
Tin	231.928°C	130	0.3	Medusa
Zinc	419.527°C	130	0.5	Medusa
Aluminium	660.323°C	130	0.7	Oberon
Silver	961.78°C	130	1.1	Oberon
Copper	1084.62°C	130	2	Oberon

- 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.