Furnaces
Dual

- Essentially Gradient Free
- Heatpipe Operation from Indium to Copper
- Simple Use - no zone offsets to adjust

Isotech metrology furnaces have more than 35 years of proven use and are widely used by the worlds' leading NMIs. For the optimal use of fixed point cells the temperature uniformity should be less than 10mK over the length of the fixed point sample CCT/2000-13, "Optimal Realization of the Defining Points of the ITS-90..."

Isotech heatpipe furnaces offer essentially gradient free operation; heatpipes provide the ideal conditions for the creation and maintenance of ITS-90 fixed point cells. Unlike some other companies Isotech can provide heatpipe furnaces to suit Indium, Tin, Zinc, Aluminum, Silver and Copper fixed points.

Plateau length is determined by the difference in temperature between the heatpipe and cell - this can be adjusted to give a plateau of any length of up to tens of hours. Our controllers offer extra resolution and allow adjustment to 0.1°C right up to 1090°C. The Potassium and Sodium models have a cooling coil in the lid with connections to circulate tap water to keep the furnace lid cool protecting the SPRT and reducing heat load into the lab.

A pre-warming tube with a temperature approximately equal to that of the heatpipe made of a unique and gas-tight material, is provided to heat the SPRT prior to it being placed in a cell.

The furnaces feature an adjustable independent and adjustable over temperature device to protect expensive cells and SPRTs as well as a second internal over temperature safety device.

In addition to the heatpipe furnaces described the Dual Furnaces incorporate a second furnace which, because of its unique design, will safely (and without contamination) pre and post-condition the thermometers.

There is also a separate storage enclosure for up to four thermometers with adequate support for the thermometer head.

With the Dual Furnace the thermometers are removed from their storage enclosure and placed in the preconditioning furnace. The furnace is slowly heated to the Cell temperature. The thermometers are protected from contamination by a slow air flux around them. One by one the thermometers are transferred into the cell for 20 to 30 minutes for calibration and thence back to the conditioning furnace. When all the thermometers have been calibrated, the conditioning furnace is slowly cooled back to 400°C when the thermometer can safely be removed into room temperature.

Isotech Dual Furnaces

Model	Temperature Range	Heatpipe Type	Cells
17707	125°C to 250°C	Water	Indium Tin
17706	400°C to 1000°C	Potassium	Zinc Aluminium Silver
17705	500°C to 1100°C	Sodium	Aluminium Silver Copper

Accessories

Accessories include equalizing blocks, a fan assembly to keep thermometer handles cool and a thermometer holder. With an equalizing block it is possible to use the furnace for comparison calibration.

Enhanced Furnace Design

Developed with user feedback and hands-on experience, the Isotech Furnace Range combines trusted performance with a range of practical features designed to improve usability.

Controllers are positioned at the top for easier access, an SPRT Stand is included for secure thermometer support, and Cable Tides and Accessory Pods help maintain a tidy, efficient workspace. The furnaces are programmable to automate the melting and freezing of cells and offer both USB and Ethernet connectivity, all with bright, crystal-clear displays.

Specification

Uncertainty	<1mk (with cells)
Uniformity	<10mk over length of fixed point sample
Control	0.1°C Resolution: Gain Scheduling Action and Power Feedback
Interfaces	Ethernet and USB Host
Core Size	52 x 432mm
Dimensions	Height - 960mm Width - 600mm Depth - 560mm
Weight	119kg
How to order	Please specify model and voltage required