



-100 to 40°C

PROVISIONAL DATA

-100°C Dry Block Isis

- 20,000 hours testing, equal to 10 years use
- Minimum Temperature -100°C (-148°F)
- No expensive liquids

The Isis Dry Block offers operation to temperatures as low as -100°C, and is the only block bath working to such a low temperature. Now it is possible to calibrate temperature sensors such as PRTs, Thermocouples and Thermistors at ultra low temperatures without the need for a liquid bath.

Portability and Safety

Unlike a liquid bath the Isis requires no costly, or hazardous fluids and offers greater portability. This will be of particular value to calibration engineers working on site with low temperature freezers as encountered in pharmaceutical, aeronautical and food environments.

The minimum operating temperature is less than stirred liquid laboratory calibration baths and users in laboratories will also benefit by avoiding the ongoing need for expensive fluids.

The maximum operating temperature is 40°C, a little higher than the minimum operating temperature of Isotech Hot Blocks. This permits covering the range from -100°C to 650°C or higher with just two Isotech blocks. By limiting the maximum temperature the reliability and operating life of the cooling engine is maximised, and has been agreed in consultation with the licensee of the cooling technology, see below.

Cooling Technology

The Isis makes use of a Free Piston Stirling Cooler (FPSC) which provides a massive 80 Watts of cooling power to the calibration block. Specialist materials, patent applied for, are used for the heat transfer from the FPSC to the block.

Operating Life

Reliability is a prime attribute of this revolutionary new product. Testing at 20,000 hours (nominally equivalent to 10 years at 40 hours use each week) shows that -100°C is still possible, with an increase in cooling time <10%.



Benefits

Isotech can offer full support with options for UKAS / ILAC calibration, tutorial on getting the best calibration uncertainties and a full range of supporting reference thermometers, indicators and software.

The Isis has a large insert 35mm diameter by 160mm deep. This allows for calibration of multiple sensors. For thermal validation applications there is an insert with pockets for a reference probe (6.5mm) and 20 x 3.5mm pockets for thermocouples. This allows a single calibration cycle to validate up to 20 probes at a time.

<http://www.isotech.co.uk>



*The Isis Dry Block Model 525
The only Dry Block working to -100°C*

METAL BLOCK INSERTS

Standard Insert A

9.5mm, 8.0mm,
6.4mm, 6.4mm,
4.5mm, 4.5mm
All 157 deep

ALTERNATIVE INSERTS

Standard Insert B

13mm, 10mm,
8mm, 5mm
and 3.5mm
All 157 deep

Standard Insert C

8mm and
6 x 6mm
All 157 deep

Validation Insert

6.5mm and
20 x 3.5mm
All 157 deep

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| Model | 525 Isis | |
| Temperature Range | -100°C to +40°C | |
| Approximate time to Temperature from Ambient | -20°C | 20 minutes |
| | -40°C | 30 minutes |
| | -60°C | 40 minutes |
| | -80°C | 60 minutes |
| | -100°C | 90 minutes |
| Absolute Stability | At 0°C ±0.03°C (30 minutes) | |
| | At -90°C ±0.02°C (30 minutes) | |
| Radial Homogeneity (similar pockets) | 0.01°C | |
| Vertical gradients (over bottom 40mm) | 0°C 0.1°C | |
| | -90°C 0.2°C | |
| Calibration Volume | 35mm diameter x 160mm deep (Excludes Insulating Cap) | |
| Standard Insert | 6 thermometer wells as standard (9.5mm, 8.0mm, 6.4mm, 6.4mm, 4.5mm and 4.5mm All 157 deep) | |
| Power | 200W | |
| Voltage | 100-240Vac, 50/60Hz | |
| Dimensions | 215mm(W) x 420mm (D) x 640mm (H) | |
| Weight | 22.7kg | |