

Previous model number: P200

CP264-0420

High Sensitivity Large Sample Calorimeter

Introduction

The ANTECH CP264-0420 High Sensitivity Large Sample Calorimeter is applicable to a wide range of plutonium measurement requirements including international safeguards measurements, shipper-recipient distance measurements, in-plant accountancy measurements and anomaly resolution in passive neutron coincidence counting or segmented gamma-ray scanning. The instrument also has a role in replacing a portion of destructive assay.

The CP264-0420 is transportable without compromising measurement accuracy. It can be moved to a measurement site so that it is not necessary to move Special Nuclear Material (SNM).

The modular, portable design of the CP264-0420 facilitates installation, maintenance and the use of the instrument in a variety of measurement applications. In the standard configuration the calorimeter is capable of measuring plutonium bearing samples that can be contained in a cylindrical canister with internal dimensions 190.5 mm (7.7 in) diameter and 355.6 mm (14.0 in) high. The calorimeter has a variable sample power measurement range from below 0.005 watts to 20 watts and an operating temperature range of 20 to 50 degrees centigrade.

It is possible to accommodate variations to the standard design for different requirements and for special sample types or sample packaging. In particular, the measurement chamber volume may be reduced or increased in size and the measurement precision and measurement time may be optimised for a specific limited sample power range. Smaller sample diameter custom sizes achieve significantly better precision and accuracy at lower measurement powers (e.g. <5 mW).

Features

- True Isothermal “air bath” absolute calorimetry measurements
- Automatic software algorithms for equilibrium sample power prediction and measurement end point determination
- Automatic plutonium and americium decay correction
- Redundant measurement sensors and operation modes to optimise accuracy or measurement time
- Sample lifting device with fail safe hoist
- Comprehensive and traceable electrical calibration capability that reduces dependence on plutonium standards
- Comprehensive user friendly windows based user interface software



Benefits

- Absolute measurement of sample thermal power
- Reduced criticality hazard as water is not used as a heat sink
- Measurement times with equilibrium sample power prediction of between 2 and 8 hours (depending on the sample packaging)
- Total mass of plutonium determined with error propagation when plutonium isotopic data is provided on a file or 'on-line' from ANTECH Plutonium Gamma-ray Isotopic Measurement System
- Highly transportable trolley mounted system
- Custom designs are available from ANTECH for different sample container dimensions and different measurement sensitivities
- Short delivery time of less than six months for custom designs
- Measurement approved for use by IAEA and WIPP

Specification

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| External dimensions (H x W x D) | 1470 mm x 1230 mm x 690 mm |
| Overall height of removable hoist | 1870 mm |
| Weight of complete trolley mounted instrument | 300 kg |
| Thermal power measurement accuracy | Better than 0.5% over the operating range and better than 0.2% at 1.0 W power (7.5 in diameter sample) |
| Variable measurement chambers operating range | 20 - 50 °c |
| Measurement range | 5 mW - 20 W |
| Power consumption | 300 - 600 W 110/230 VAC |