



CAL^o3k

NEXT GENERATION CALORIMETERS



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CAL3K-A OXYGEN BOMB CALORIMETER

SUPERB OXYGEN BOMB CALORIMETERS FOR TODAY'S ANALYTICAL NEEDS.



CAL3K-A CALORIMETER

The CAL3K-A is the second in the range of innovative new oxygen bomb calorimeters from DDS. It is the companion product to the CAL3K-AP, but with external oxygen filling. The new range, from the engineers who designed the CAL2K oxygen bomb calorimeter range, features higher speeds and improved accuracy with a small carbon footprint (uses less resources; no water required, lower power consumption). The new bayonet bomb vessel with the option of the adiabatic, isothermal or dynamic calorimetry methods results in optimized speed and accuracy. This can be tailored to your laboratory needs by parameter settings via the USB port. The CAL3K-A conforms to ASTM D5865-12, ASTM D4809-13, ISO 1928-2009, and DIN 51900-2 international standards. The traditional CAL2K-4 bomb vessel has been replaced with a self-locking and sealing bayonet vessel with built-in temperature sensors. The vessel is completely removable for easy sample management, cooling, cleaning and maintenance.

The oxygen bomb calorimeter, filling station and air cooler are operated together for effective routine sample determination, using 2 or more bomb vessels. It is recommended to use the air cooler for optimum results and faster throughput.

COMPLETE SYSTEM FOR USE WITH THE CAL3K-A.

The CAL3K-A is best suited for a production environment with shared oxygen supply (to other users) and robust handling.

The following accessories can be added to the calorimeter:

- CAL3K Air Cooler
- CAL3K Manual Bayonet Bomb Vessel
- Sartorius Balance (sold separately)
- High Pressure Oxygen Regulator

The complete CAL3K-A oxygen bomb calorimeter system contains all the parts and consumables necessary to set up the unit. The installation kits included with the setup of the calorimeter contains consumables for approximately 200 samples, depending on the type of sample being analyzed (coal analysis, animal feed analysis). Other samples like oil, might use more consumables as they are corrosive and could cause wear and tear. Additional consumables can be purchased separately from our authorized agents.

The complete calorimeter system is delivered with installation kits for the calorimeter, air cooler, filling station and vessels (for approx. 200 firings).

The CAL3K-A uses a combination of the Isothermal and Adiabatic calorimetry methods, while still using the dry method, i.e. it's waterless. The maximum determination speed is up to 3 minutes.

The vessel is filled with oxygen in an EXTERNAL filling station which has a flow adjuster. The supplied filling pressure is indicated as well as the vessel pressure. The fastest performance was achieved with one calorimeter, 3 vessels and 2 air coolers. This is a full occupation for a single operator.

CAL³K

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CAL3K-A CALORIMETER NEW INNOVATIVE FEATURES.



TEMPERATURE CONTROL

No temperature control of room/lab required



7 CALIBRATION FIELDS

For different mode and different calorimeters



HIGH SPEED DETERMINATIONS

Choose between faster or more accurate determinations



EXTREMELY ACCURATE

Extremely accurate (%RSD - 0.05%) determination eliminates multiple sample repeats



MULTIPLE COMM CHANNELS

1 Wired (USB) and 2 optional wireless channels



USER FRIENDLY

User Friendly Operation



10 CALIBRATION AVERAGE

For variable amount of calibration average to suit your application



LOW POWER CONSUMPTION

Very low power consumption. No temperature controlling required.



ECO FRIENDLY

Eco Friendly - small carbon footprint. No water, low power consumption.



TEMPERATURE RANGE

Extensive temperature range from 0°C to 70°C.



EVENT LOGGING

Built-in event logging for ~6000 events



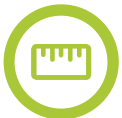
FAULT FINDING

Extensive fault finding and testing



TEMPERATURE ACCURACY

Temperature accuracy of 10ppm (parts per million)(0.00001°C)



RESULTS

Results in MJ/Kg, BTU/lb or Cal/g



COMPENSATION*

Compensation for firing energy and sulphur



PRESET FIELDS

One default setting per mode



OPERATING PARAMETERS

Operating parameters can be changed via USB interface in experimental mode



RESTRICT ACCESS

Operating parameter access is password restricted



LARGE STORAGE

Up to 1024 results storage



INTELLIGENT VESSEL

Intelligent vessel with built-in temperature sensing



LINEAR SENSORS

Linear temperature sensing with platinum sensors



SAFETY

Safety checks guarantee the safety of the operator.



STEP-BY-STEP HELP

Screen prompts assist with step-by-step instructions to operate the calorimeter



BAYONET BOMB VESSEL

Self-Locking and Self-Sealing manual bayonet bomb vessel



AIR COOLER

No water required to cool the bomb vessel



BALANCE INTERFACE

Balance interface with baud speed setting



IMPROVED INITIAL TIMING

Based on drift and time, or time after drift



LIMS

FULL LIMS SUPPORT

For the assignment, scheduling, and tracking of samples.



FILTER DATA ON EVENTS

Extensive testing and detailed data viewing



NO WATER REQUIRED

No Water Bucket. No Spillage. No Measuring.



THREE OPERATING MODES

Isothermal, Adiabatic and ISOBATIC (and experimental)



MANUAL OXYGEN FILLING

Makes use of an external oxygen filling station

CAL3K-A KIT & CONSUMABLES THE COMPLETE KIT AND ALL CONSUMABLES

The CAL3K Bomb Calorimeter Installation Kit includes :

- Power Supply (3K-SM)
- Mains Cable 220V (KETTLECORD)
- Balance Cable (3K-BC)
- PC Cable USB (USBCABAB)
- PC Keyboard PS2 (CAL2K-KB)
- Preparation Stand (3K-4-PS)
- Stainless Steel Tweezers (TWEEZERS/S/S)
- Certified Benzoic Acid Tablets (50 x 0.5g tablets per bottle)(CAL2K-4-BA)
- High Pressure Oxygen Pipe 4mm (4m long, clear)(3K-1-OP)
- Oxygen Regulator Connection Standard (Quick Fit)(3K-1-RC)
- Calorimeter O-Rings (1 packet of 5)(3K-1-CF-05)
- O-Ring Retainer for Centre Filling Plastic (3K-1-LCR)
- Tool to Remove O-ring Retainer (3K-1-LCR-TOOL)
- Vessel Nozzle Kit complete with nozzle o-ring and nut (3K-4-VN-KT)
- Printed Installation Guide (3K-1-INST)

The CAL3K Air Cooler Installation Kit includes :

- Power Supply (3K-SM)
- Mains Cable 220V (KETTLECORD)

The CAL3K Bayonet Vessel Installation Kit includes :

- Center Electrode (3K-4-CE)
- Vessel Nozzle O-Ring (3K-4-VNR)
- Outside Electrode (3K-4-OE)
- Crucibles (CAL2K-4-CB-SINGLE)
- Deflector Plate (3K-4-DP)
- Firing Wire (3K-4-FW)
- Firing Cotton (1 packet of 200 threads)(3K-FC)
- Lid O-Rings (1 packet of 5)(3K-4-LR-5)

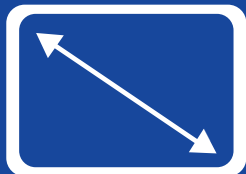
The CAL3K Filling Station Installation Kit includes :

- 2 x Flow Adjustor O-Rings (3K-3-FR)
- 5 x Nozzle O-Rings (3K-3-NR)
- 1 x High Pressure Pipe 4mm (2m, clear)(3K-3-OP)
- 1 x Oxygen Regulator Connection (3K-3-RC)
- 1 x Defiller Cap (3K-3-DC)



CAL3K-A TECH SPECS

All the technical specifications for your CAL3K.



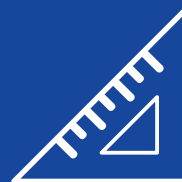
LCD Display

Large display for easy viewing.

x3

Easy to Use

With 3 different operating modes



Compact Size

Approximately 350mm x 280mm x 240mm



Lightweight

Light weight for easy moving.
Approximately 12kg.



TUV CE Certification

Complies with ASTM, DIN and ISO International Standards.

Specification

Information

Working (Operating) Temperature

15-70°C

Storage Temperature

0-70°C

Temperature Resolution

0.000001°C

Reproducibility/Repeatability

<0.01% RSD

Resolution

0.0001 MJ/Kg

Results per hour

12 samples per hour using 3 bayonet bomb vessels

Measuring range max.

99MJ, 99000J

Working temperature min.

0°C

Working temperature max.

50°C

Temperature Measurement Resolution

10ppm (parts per million)

Cooling Medium

Air

CAL3K-A TECH SPECS

All the technical specifications for your CAL3K.

| Specification | Information |
|----------------------------------|---------------------------------|
| Type of Cooling | Airflow |
| Oxygen Operating Pressure Max | 40 bar |
| Balance/Scale Interface | RS232 |
| Printer Interface | RS232 |
| PC Interface | USB |
| Power Input | 12W |
| Interface External Keyboard | PS2 |
| Oxygen Filling | Manual |
| De gasification | Manual |
| Halogen (Decomposition) Vessel | Yes, optional |
| Analysis according to DIN 51900 | Yes |
| Analysis according to ASTM D240 | Yes |
| Analysis according to ASTM D4809 | Yes |
| Analysis according to ASTM D5865 | Yes |
| Analysis according to ASTM E711 | Yes |
| Analysis according to ISO 1928 | Yes |
| Dimensions | 350mm x 280mm x 240mm |
| Weight | ~ 12.000kg |
| Permissible Ambient Temperature | 0-35°C |
| Permissible Relative Humidity | 80% |
| RS232 Interface | Yes |
| USB Interface | Yes |
| Voltage | 220-240 / 100-120V, 12VDC, 3Amp |
| Frequency | 50/60 Hz |

Please Note : Technical Specifications subject to change without prior notice. Please contact our team for accurate technical specifications at the time.



CONTACT US- CAL3K
OUR TEAM IS READY TO ASSIST.

CAL3K HQ

Where the magic happens.

From the designers, engineers and manufacturers who brought you CAL2K Calorimeters.

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