The 6200 Isoperibol Calorimeter

6200 Isoperibol Calorimeter

The 6200 Calorimeter has been designed to provide the user with:

- A **traditional design** calorimeter with removable oxygen bomb and bucket.
- A **high speed** calorimeter capable of performing up to 9 tests per hour when equipped with two bombs and two buckets.
- A **high precision** calorimeter capable of exceeding the repeatability and reproducibility requirements of all international standard test methods.
- A **full featured** calorimeter capable of operating on either an open or closed loop basis.
- A **compact** calorimeter requiring minimum laboratory bench space.
- A modern intuitive **graphical user interface** for ease of operation and training.
- A calorimeter with up to date **digital hardware**, **software** and **communications** capabilities.
- A calorimeter that is **cost effective** and which can incorporate a user's current bombs, buckets, and accessories.

SPECIFICATIONS

Model Number:
6200

Tests Per Hour:
4-9 as equipped

Operator Time Pre-Test:
6 min

Calorimeter Type:
True Isoperibol

Bomb Type:
Removable

Closure Type:
Screw Cap

Bucket Type:
Removable

Bucket Filling:
Manual

Oxygen Filling:
Semi-Automatic

Pressure Release:
Needle Valve

Bomb Washing:
Manual

Temperature Resolution:
0.0001 °C

Maximum Sample Size:
8000 Calories

Repeatability (%RSD):
0.10

Memory:
1000 Tests

Balance Connection:
RS232C Serial

Printer Connection:
RS232C Serial

Computer Connection:
Ethernet

Special Bombs:
1108CL
1104 Explosive
1105C Platinum Lined
1107 Semimicro

6200 Isoperibol Calorimeter with 1108 Oxygen Bomb, an A391DD Oval Bucket, and 1757 Printer.

Removable Bomb

The Model 6200 calorimeter utilizes the Parr 1108 oxygen bomb. More than 20,000 of these reliable oxygen combustion bombs have been placed in service on a world wide basis. This bomb features an automatic inlet check valve and an adjustable needle valve for controlled release of residual gasses following combustion. They are intended for samples ranging from 0.6 to 1.2 grams with a maximum energy release of 8000 calories per charge.

The 1108 oxygen bomb is made of a high-strength, high-nickel stainless steel designed to resist the corrosive acids produced in routine fuel testing. An alternative 1108CL bomb is available, constructed of an alloy containing added cobalt and molybdenum to resist the corrosive conditions produced when burning samples containing chlorinated compounds.

Removable Bucket

The A391DD removable bucket has been designed to hold the bomb, stirrer and thermistor with a minimum volume of water and to provide an effective circulating system which will bring the calorimeter to rapid thermal equilibrium both before and after firing.

Dual Bomb and Bucket Operation

Users with large testing requirements can equip their 6200 calorimeters with two bombs and two buckets so that one set can be reloaded while the current test is underway in the calorimeter.

True Isoperibol Operation

As with the Model 6300 calorimeter, all of the surfaces which surround the inner chamber of the 6200 calorimeter are controlled to a constant temperature from a circulating water bath. This enables the control section of the calorimeter to both determine the heat leak corrections and apply them in real time. This combination makes it possible to operate the calorimeter in Parr's dynamic mode for rapid testing without a detectable difference in the precision of the test.

Open or Closed Loop Operation

The 6200 calorimeter can be operated on an open system where tap water is used both to cool the jacket and to fill the bucket. This minimizes the need for a separate water handling system and cooler and will also minimize the capital investment. Users with significant testing loads or poor quality tap water will want to add a Model 1564 or 6520 Water Handling System (see page 23) and operate with deionized, temperature controlled, and pre-measured water.

Oxygen Filling System

To speed and simplify the bomb filling connection, the 6200 Calorimeter has a Semiautomatic system for charging the bomb with oxygen. Oxygen from a 1A commercial cylinder is connected to a micro-processor controlled solenoid installed in the calorimeter.

To fill the bomb, the operator simply slips the filling hose connector onto the bomb inlet valve and pushes a key to start the filling sequence. Filling then proceeds automatically at a controlled rate to a pre-set pressure. Built-in safety provisions will prevent an accidental overcharge, and an error message will be shown if the desired pressure is not attained.

Compact Design

The 6200 calorimeter is housed in a compact case 22.5 inches wide, 15.5 inches deep and 17.0 inches high (57x40x43 cm).

The units require a 115 or 230 volt electrical supply, tap water and a drain (or a water recirculationg system) and a supply of oxygen.

1757 Printer

Ordering Guide

6200 Isoperibol Oxygen Bomb Calorimeter with 1108 Oxygen Bomb.

Model No.	***Voltage***	***Description*** *(Select part no. for voltage required.)*
6200EA	115V	Isoperibol Calorimeter System with
6200EF	230V	1108 Oxygen Combustion Bomb
6200EACL	115V	Isoperibol Calorimeter System
6200EFCL	230V	1108CL Oxygen Combustion Bomb

See pages 26 through 30 for optional accessories.

A Moderately Priced, Micro-Processor Controlled Oxygen Bomb Calorimeter Without Jacket Temperature Control

Outwardly, the 6100 Calorimeter appears to be the same as the 6200 Isoperibol Calorimeter, since both calorimeters are built into the same housing with the same series 6000 controller. But, there is one important difference: the 6100 Calorimeter does not have a temperature controlled jacketing system as required for isoperibol calorimetry. The 6100 Calorimeter is intended for the user who wants a modern calorimeter with the convenient automatic features provided in the 6200 Calorimeter and whose precision requirements can be met with a static system without isoperibol control. Or, for users whose work load is small or intermittent, making it preferable to purchase a less expensive model. To meet these criteria, the temperature controlled water jacket and its accessories have been removed from the 6200 Calorimeter and replaced in the 6100 with an insulating jacket around the bucket chamber, comparable to the arrangement used in the 1341 Plain Calorimeter. This eliminates all water and water connections, resulting in a significant saving in cost. And, with no permanent external connections (except a connection to an oxygen tank). The 6100 Calorimeter can be set up and made ready to operate in a few minutes, or it can be set aside when not in use.

Good Repeatability

To obtain the best precision with an uncontrolled jacket, the 6100 Calorimeter has a temperature monitoring capability built into the jacket. This allows the calorimeter to measure the actual jacket temperature and apply the appropriate heat leak corrections in real time. While not equal to a controlled jacket, the 6100 method offers a significant improvement over the traditional static jacket and makes it possible to obtain reasonable precision without the long pre- and post-periods normally required for static jacket calorimetry. It also makes it possible to use the Parr Dynamic Method for rapid testing. As with all static jacket calorimeters, best results will be obtained when the calorimeter is operated in a location where it is not subject to drafts or fluctuating air temperature, preferable in a temperature-controlled room. It may require more frequent standardization if the ambient temperature changes during the day or from day to day. With these constrictions under control, standard deviations in a series or tests with a uniform sample, such as benzoic acid, should not exceed 0.2 percent. The precision obtainable will be more than adequate for most waste screening and teaching applications.

Compact Design

The 6100 calorimeter is housed in a compact case 22.5 inches wide, 15.5 inches deep and 17.0 inches high (57x40x43 cm).

The units require a 115 or 230 volt electrical supply and a supply of oxygen.

Ordering Guide

6100 Oxygen Bomb Calorimeter with 1108 Oxygen Bomb.

Model No.	***Voltage***	***Description*** *(Select part no. for voltage required.)*
6100EA	115V	Calorimeter System with
6100EF	230V	1108 Oxygen Combustion Bomb
6100EACL	115V	Calorimeter System with
6100EFCL	230V	1108CL Oxygen Combustion Bomb

See pages 26 through 30 for optional accessories.