

## Carbolite Sterilization Oven



**Stock Code:** OY1971

**Manufacturer:** Carbolite

**Model:** 220I GT oven

**Serial:** 20-501725

**New or Used:** Used (Second Hand)

**Internal Size (WxDxH mm):** 600 X 650 X 650

**Max Temp:** 200

**Other Info:** Gas Tight Oven

**External Dimensions (WxDxH):** 1250 X 1100 X 2150

### TECHNICAL SPECIFICATION

### DESCRIPTION OF EQUIPMENT

Controlled Atmosphere Oven suitable for use in a batch production environment. The oven is suitable for use with inert gases such as nitrogen. The fully sealed inner case enables oxygen levels of less than 50ppm to be achieved in the work chamber.

### INTERIOR CHAMBER DIMENSIONS

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610mm high x 610mm wide x 610mm deep

### NORMAL WORKING TEMPERATURE RANGE

50°C to 200°C

### MAXIMUM OPERATING TEMPERATURE

200°C

### TEMPERATURE STABILITY

Better than  $\pm 1^\circ\text{C}$  under steady state conditions.

### TEMPERATURE UNIFORMITY

Better than  $\pm 5^\circ\text{C}$  over the full working range. Better than  $\pm 2^\circ\text{C}$  up to 130°C.

### TEMPERATURE SENSOR

Type "K" Mineral Insulated Thermocouples.

A separate 15mm OD pipe with a gas tight end seal is provided to enable survey thermocouples to enter the chamber.

### TEMPERATURE CONTROL

Eurotherm 2404 digital solid state Time/Temperature programme controller with 0-10 volt analogue retransmission of the measured value. The signal is brought out to a multiway connector on the rear of the control cabinet.

### POWER CONTROL

Thyristor based solid state relay working in the fast cycle zero voltage-switching mode.

### OVERTEMPERATURE PROTECTION

Eurotherm 2116 on/off controller and separate safety contactor. This controller will shut down the heating elements in an over temperature condition but the main fan and nitrogen gas flow will continue.

### AIR CIRCULATION

Forced air circulation by top mounted fan and air guide system. A nitrogen gas purge around the fan shaft helps to reduce contamination around the motor seal. The motor is stationary during the nitrogen purge stage of the cycle and runs during the heating and cooling stages.

### LOCATION OF CONTROLS

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All controls including the Oxygen analyser are mounted in a control box on the top of the oven. A large indicator lamp is fitted to show that an oven cycle is running. The light is steady when the cycle is running and flashing when the cycle is complete. All the wiring within the control cabinet will be in PTFE insulated cable.

### INTERIOR CHAMBER MATERIALS

Grade 430 dull polished ferritic stainless steel fully seam welded to form a gas tight enclosure. The heaters and thermocouples are sealed into the inner chamber with compression fittings located on the outside of the main case.

### EXTERIOR MATERIALS AND FINISH

Stainless steel rectangular hollow section tube panelled with zinc coated mild steel sheet and finished with two-pack epoxy semi gloss paint. The main body of the oven and the control panel is in Cream RAL 9001 and the door is finished in Blue RAL5015.

### NVP EXTRACTION

On either side of the oven at the front are two 50mm ports complete with stainless steel ball valves to enable the chamber to be manually purged with air prior to opening the door. A 75mm OD tube facing upwards is provided to connect to the customers extract system.

### THERMAL INSULATION

High quality mineral wool blanket.

### CHAMBER ACCESS

Centrally pivoting door with two over centre toggle clamps on each side. This arrangement allows the door to fit squarely to the front of the oven and reduce the stress on the door seal close to the hinges. A door switch is fitted. The design is improved to eliminate the use of a striker plate that might interfere with the swinging operation of the door.

### SHELVES & RUNNERS

The chamber is supplied with 6 pairs of shelf runners at 100mm centres. Six nickel-plated wire grid shelves are supplied. The shelf runners are removable should the method of loading the oven be changed in the future.

### HEATING ELEMENTS

Mineral Insulated metal sheathed elements sealed with compression fittings where they pass into the chamber.

### POWER REQUIREMENTS

Total heating power is 3.0kW

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### POWER SUPPLY REQUIRED

240 volts single phase and neutral 50Hz. The supply cable is 2 metres long and fitted with an industrial 16amp 3 pin industrial plug.

The control circuit is energised from a central UPS. An IEC connector is provided on the rear of the control cabinet to accept the supply.

### GAS CONTROL

Four solenoid valves, two flowmeters, and needle valves are supplied to ensure safe automatic working of the gas system. A timer is fitted to control the initial purge time during which a high gas flow clears the oxygen from the chamber. At the end of this period the flow reduces and the oven starts to heat up. The estimated high purge gas flow is 40 litres per minute for 90 minutes reducing to around 1 litre per minute during the heating and cooling phase of the process cycle. The purge flowmeter is scaled 10-100 litres per minute and the low flowmeter is scaled 0.6-5 litres per minute. A wash bottle/bubbler is mounted on the front of the control panel to give a visual indication of gas flow and create a small back pressure while the oven is running. A large bubble pot is located at the rear of the oven to act as an over pressure relief valve.

The gas exhaust pipe is located in the base of the chamber at the front left hand side. The 22mm OD pipe from the oven connects to a catchpot. The exhaust pipe from the catchpot is 22mm OD and runs at an angle up the left hand side of the oven.

### OXYGEN ANALYSER

Provision is made for an Oxygen analyser to be fitted at a later date.

A separate sample pipe is provided in the top rear of the oven to connect to the analyser cell.

### OVEN STAND

An integral stand, fabricated from stainless steel, is included to raise the oven hearth to 700mm above floor level. View Carbolite Sterilization Oven on our web site at <https://www.rileysurfaceworld.co.uk/machines/29262.htm>

PHOTOGRAPHS TAKEN PRIOR TO REFURBISHMENT.