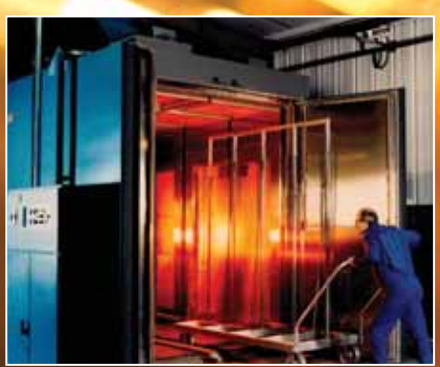
CARBOLITE®

Ovens
for Laboratories & Industry



The Technology of Heat

Innovative from the start in Sheffield in1938 Carbolite took its name from the silicon carbide elements that were at the heart of its new high temperature combustion furnaces. Continuing to grow in 1956 the privately owned business became incorporated as a limited company and in the intervening years Carbolite has developed to become the UK's largest manufacturer of standard laboratory and bespoke industrial furnaces and ovens exporting to over 100 countries worldwide.

Operating from our modern manufacturing plant and sales office in the heart of the Peak District National Park, Carbolite has established a reputation for engineering expertise that is founded upon literally hundreds of man-years of practical experience in applied heating technology.

Continuous product development and longstanding, interactive relationships with suppliers enable us to incorporate the very latest technologies into our products, keeping us at the forefront in oven design.

Standard chamber designs are available from 3 litres to 14,000 litres and can be supplied with many load handling options. Our gas cooled chambers start at -150°C and our ovens are available up to 700°C (furnaces up to 1,800°C).

Temperature control options range from simple set-point controllers, to sophisticated multiple zone, cascade and programmable, temperature control systems.

In addition to the versatile range of general laboratory products Carbolite also manufacture a range of application specific ovens for such uses as Clean Room Installation, Contact Lens Manufacture, Thermoplastic Pre-heating and Draping, heating under inert Modified Atmospheres and Rapid Cooling for Annealing.

A natural extension of our expertise in temperature control has led to the development of a range of high temperature block baths able to operate up to 400°C.

Carbolite's flexibility and ability to solve customers' individual application requirements have given our products an important place in aerospace, engineering, materials science, heat treatment, medical, bioscience and contract testing laboratories around the World to name just a few.

Carbolite not only regularly supplies products with standards compliant furnace and oven designs, such as for NADCAP (AMS2750D) heat treatment processes, but can also supply fully traceable certification for control, measurement, recording and data acquisition devices, issued by an independent UKAS / NAMAS accredited laboratory.

All of the products featured in this catalogue and more, are available through an extensive worldwide network of dealers and local offices. Factory trained field engineers provide a complete range of after sales support and technical advice and guidance on product selection is available from a team of qualified engineers based at Hope, or via **www.carbolite.com**

CONTENTS

CARBOLITE®
www.carbolite.com

APEX Ovens

Standard features

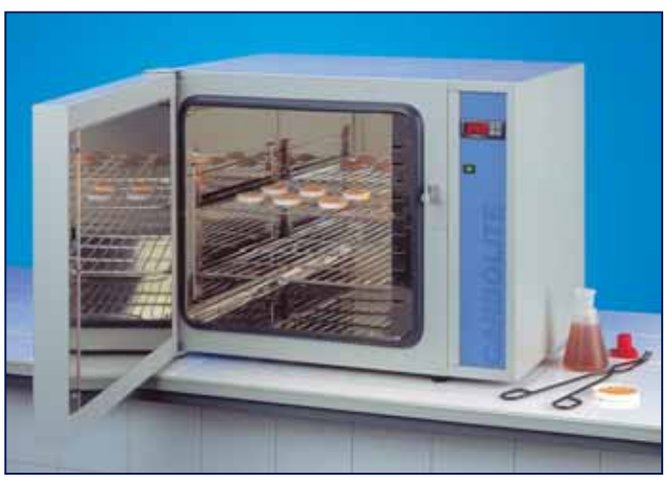
- ✓ 250°C maximum operating temperature.
- ✓ 30, 60 or 120 litres chamber volumes.
- ✓ Fan convected for rapid heating & excellent uniformity.
- ✓ Chemically resistant stainless steel liner.
- ✓ Two adjustable nickel-chrome plated wire shelves.
- ✓ Lever latch door & airtight silicone seal.
- ✓ Built to comply with BS EN 61010-2-010-1995 & BS EN 50014:1993.
- ✓ Meets 'Electrically Heated Drying Oven' performance standard BS 2648.

Options

specify these at time of order

- Over-temperature protection to DIN 12-880 class 2 (recommended to protect valuable contents & for unattended operation).
- Digital countdown timer to switch oven off.
- Additional sets of shelves & runners.
- Key-lock door.
- Low voltage options for use below 220V.
- Routine spares kit.

AX60 OR AX30



AX60

An uncomplicated economical range of ovens, built to Carbolite's high standards, with safe external surface temperatures that conform to BSEN61010.

Model	Max temp (°C)	Temp Uniformity @ 250°C (±°C)	Heat-up time to max (mins)	Recovery time to max (mins)	Dimensions		Shelves fitted/ accepted	Shelf loading Each/ total (kg)	Volume (litres)	Air changes /hr	Max power (W)	Weight (kg)	Power supply
					Internal H x W x D (mm)	External H x W x D (mm)					Holding power @max W		
AX30	250	±5.0	23	3	295 x 300 x 320	440 x 590 x 465	2 / 4	10 20	28	65	1000 320	24	230V single phase
AX60	250	±5.0	25	3	395 x 400 x 420	540 x 690 x 565	2 / 6	10 30	66	28	1500 475	37	230V single phase
AX120	250	±5.0	26	3	495 x 500 x 520	640 x 790 x 665	2 / 8	10 40	128	14	2000 650	55	230V single phase

Minimum operating temperature approximately ambient plus 10°C
Uniformity is measured in an empty chamber with vents closed, after a stabilisation period
Shelf loadings are based on evenly distributed weight

PEAK Natural Convection General Purpose Laboratory Ovens

Standard features

- ✓ Economical natural convection models.
- ✓ 300°C maximum operating temperature.
- ✓ 27 to 215 litres chamber volumes.
- ✓ TLK simple PID controller.
- ✓ Chemically resistant stainless steel liner.
- ✓ Two nickel-chrome plated wire shelves.
- ✓ Lever latch door & airtight silicone seal.
- ✓ Compliant with safety standards BS EN 61010-2-010-1995 & BS EN 50014:1993.
- ✓ Meets 'Electrically Heated Drying Oven' performance standard BS 2648.

Options

specify these at time of order

- Over-temperature protection to DIN 12-880 class 2 (recommended to protect valuable contents & for unattended operation).
- Hydraulic over-temperature thermostat.
- Carbolite 301, PID controller with simple ramp to set-point function.
- Digital countdown timer to switch oven off.
- Top access port for independent thermocouple.
- Accessory shelves & runners.
- Cable access port.
- Viewing window door.*
- Through door illumination system.*
- Stacking frame.
- Key-lock door.
- Door switch.
- Floor stands & wheeled trolleys.
- Routine spares kit.

PN/200

Economical high specification ovens that are suitable for general laboratory heating and drying applications yet with the versatility and optional accessories for more complex and demanding applications. Natural gravity convection offers greater economy and more gentle airflow within the chamber.

Model	Max temp (°C)	Temp stability °C PID	Temp uniformity @ 300°C (±°C)	Heat-up time to max (mins)	Recovery time to max (mins)	Dimensions		Shelves fitted/ accepted	Shelf loading Each/ total (kg)	Volume (litres)	Max power (W) Holding power @max W	Weight (kg)	Power supply
						Internal H x W x D (mm)	External H x W x D (mm)						
PN30	300	±0.5	7.0	52	8.5	255 x 330 x 320	470 x 665 x 470	2 / 3	10 20	27	750 300	30	230V single phase
PN60	300	±0.5	7.0	52	8.5	350 x 392 x 420	570 x 765 x 570	2 / 5	10 30	57	1000 480	45	230V single phase
PN120	300	±0.5	7.0	52	8.5	450 x 492 x 520	670 x 865 x 670	2 / 9	10 40	115	1500 720	60	230V single phase
PN200	300	±0.5	7.0	58	10	700 x 592 x 520	920 x 965 x 670	2 / 15	10 50	215	2250 1160	75	230V single phase

Minimum operating temperature approximately ambient plus 10°C
Uniformity is measured in an empty chamber with vents closed, after a stabilisation period
Shelf loadings are based on evenly distributed weight

PEAK Fan Convection General Purpose Laboratory Ovens

Standard features

- ✓ 300°C (PF30 to PF200) or 250°C (PF400 & PF800) maximum operating temperatures.
- ✓ 28, to 910 litres chamber volumes.
- ✓ Precision PID control & display using the TLK controller (or 301 controller for PF400 & PF800).
- ✓ Fan convection for rapid heating & recovery & excellent uniformity.
- ✓ Chemically resistant stainless steel liner.
- ✓ Two nickel-chrome plated wire shelves.†
- ✓ Lever latch door & airtight silicone seal.
- ✓ Compliant with safety standards BS EN 61010-2-010-1995 & BS EN 50014:1993.
- ✓ Meets 'Electrically Heated Drying Oven' performance standard BS 2648.

Options

specify these at time of order

- Over-temperature protection to DIN 12-880 class 2 (recommended to protect valuable contents & for unattended operation).
- Carbolite 301, digital ramp to set point PID controller.
- Digital countdown timer to switch oven off.
- Multiple segment programmable temperature control.
- Top access port for independent thermocouple.
- Accessory shelves & runners.
- Cable access port.
- Variable speed fan control.
- Viewing window door.*
- Through door illumination system.*
- Air exhaust fan.
- Moisture extraction option (comprising sealed seams and air exhaust fan).
- Stoving & curing options for extraction of small volumes of volatile solvents (see 'accessories and options' for details).*
- Stacking frame enabling ovens to be securely stacked one on another.
- Key-lock door.
- Door switch.
- Fixed or castor mounted floor stands.
- Low voltage options for use below 220V
- Routine spares kit.

Note * The stoving & curing option is not compatible with the viewing door, or through door illumination options.

PF30

High specification laboratory ovens that are suitable for general heating and drying applications yet with the versatility and optional accessories for more complex and demanding applications. Fan convection provides very rapid heating and recovery as well as excellent uniformity.

PF400

PEAK Fan Convection General Purpose Laboratory Ovens

PF800 PLUS 2 ADDITIONAL SHELVES

Model	Max temp (°C)	Temp stability °C PID	Temp uniformity @ 300°C (°C)	Heat-up time to max (mins)	Recovery time to max (mins)	Dimensions		Shelves fitted/ accepted	Shelf loading Each/ total (kg)	Volume (litres)	Air changes /hr	Max power (W) Holding power @ max W	W't (kg)	Power supply
						Internal H x W x D (mm)	External H x W x D (mm)							
PF30	300	±0.2	±5.0	25	4	300 x 290 x 320	470 x 665 x 470	2 / 3	10 20	28	50 360*	750 300	30	230V single phase
PF60	300	±0.2	±5.0	25	4	400 x 390 x 420	570 x 765 x 570	2 / 5	10 30	66	21 153*	1000 480	45	230V single phase
PF120	300	±0.2	±5.0	25	4	500 x 490 x 520	670 x 865 x 670	2 / 9	10 40	127	11 79*	1500 720	60	230V single phase
PF200	300	±0.2	±5.0	30	5	750 x 590 x 520	920 x 965 x 670	2 / 15	10 50	230	6 44*	2250 1160	75	230V single phase
PF400	250	±0.2	±5.0	85	25	1500 x 605 x 510	1970 x 980 x 720 (floor standing)	3†/ 14	10 75	460	30	6000 2200	200	230V single phase
PF800	250	±0.2	±5.0	100	30	1500 x 1200 x 510	1831 x 1460 x 1027 (floor standing)	3 / 7	10 100	910	15	9000 3500	280	230V single phase 2-phase or 3 phase

Minimum operating temperature approximately ambient plus 10°C
Uniformity values are measured with vents closed using an empty chamber after a stabilisation period
Shelf loadings are based on evenly distributed weight
* When equipped with optional exhaust fan
† The PF400 is supplied with 3 wire shelves, the PF800 with 3 perforated stainless steel shelves

LHT Laboratory High Temperature Ovens

Standard features

- ✓ 400°C, 500°C or 600°C Operating temperatures.
- ✓ 30, 60 & 120 litre capacities.
- ✓ Carbolite 301 PID controller with ramp to set point function.
- ✓ Heavy duty convection fan for good uniformity.
- ✓ Low thermal mass insulation for energy efficiency & rapid heating.
- ✓ Corrosion resistant, polished stainless steel interior.
- ✓ 2 Multi-position shelves.
- ✓ Suitable for continuous operation (see options*).
- ✓ Double skin construction for cool safe outer case.
- ✓ Hard wearing, zinc coated & stoved epoxy polyester coated exterior.

LHT 6/60

Options

specify these at time of order

- Cable entry ports.
- Over temperature protection to DIN 12-880 class 2 (recommended to protect valuable contents & for unattended operation)*.
- A range of sophisticated digital control & multisegment programmers is available.
- Optional overtemperature protection recommended for continuous operation & to protect valuable contents.
- Process timer.
- RS232 / RS485 communications.
- Viewing window**.
- Chamber illumination (requires viewing window)**.
- Variable speed fan.
- Floor stands & stacking frames.
- Routine spares kit.
- Extraction fan (may alter achievable uniformity).
- Stoving & curing upgrade for use with small volumes of volatile solvent or paint fumes (comprises overtemperature protection, extraction fan and an explosion relief panel.

**The stoving & curing option is not compatible with the viewing door or through door illumination options.

Model	Max temp (°C)	Temp stability °C	Temp uniformity @ 250°C	Heat-up time to max (mins)	Recovery time to max (mins)	Dimensions		Shelves fitted/ accepted	Volume (litres)	Max power (W)	Weight (kg)	Power supply
						Internal H x W x D (mm)	External H x W x D (mm)					
LHT 4/30	400	±0.5	±5.0	50	10	300 x 300 x 305	570 x 860 x 550	2	30	1000	73	230V single phase
LHT 4/60	400	±0.5	±5.0	—	16	400 x 400 x 405	670 x 930 x 670	2 / 3	60	1500	99	230V single phase
LHT 4/120	400	±0.5	±5.0	—	20	645 x 455 x 405	920 x 1060 x 650	2 / 4	120	2250	179	230V single phase
LHT 5/30	500	±0.5	±5.0	—	10	300 x 300 x 305	570 x 860 x 550	2	30	2000	73	230V single phase
LHT 5/60	500	±0.5	±5.0	50	16	400 x 400 x 405	670 x 930 x 670	2 / 3	60	2250	99	230V single phase
LHT 5/120	500	±0.5	±5.0	—	20	645 x 455 x 405	920 x 1060 x 650	2 / 4	120	3000	179	230V single phase or 3 phase
LHT 6/30	600	±0.5	±5.0	70	10	300 x 300 x 305	570 x 860 x 550	2	30	2000	73	230V single phase
LHT 6/60	600	±0.5	±5.0	—	10 †	400 x 400 x 405	670 x 930 x 670	2 / 3	60	2250	99	230V single phase
LHT 6/120	600	±0.5	±5.0	—	—	645 x 455 x 405	920 x 1060 x 650	2 / 4	120	3000	179	230V single phase or 3 phase

3 phase (uses 2 phases & neutral of 380/220V – 415/240V supply)
† Recovery to 500°C set-point

GP General Purpose Ovens

Standard features

- ✓ 300°C maximum operating temperature.
- ✓ Carbolite 301 controller, with single ramp to set-point facility.
- ✓ Vertical single door (A) or horizontal double door (B) formats.
- ✓ Powerful vertical (A) or horizontal (B) airflow for optimum uniformity.
- ✓ Built to withstand the rigours of a production environment.
- ✓ Long lasting, polished 430 grade ferritic stainless steel internal case.
- ✓ Robust external construction from steel section & zinc coated mild steel panels.
- ✓ Mineral insulated metal sheathed heating elements.
- ✓ Low thermal mass insulation.
- ✓ Adjustable chamber ventilation.

Options

specify these at time of order

- Over-temperature protection to DIN 12-880 class 2 (recommended to protect valuable contents & for unattended operation).
- Digital process control timers with automatic switching at set temperatures.
- Programmable controllers with 8 or 20 segments & capability to store standard temperature profiles.
- Paperless DAQ (Data Acquisition) graphical recorders.
- Top access port for independent thermocouple.
- Cable access ports.
- Bespoke specifications are available for AMS2750 (NADCAP) & ISO/TS16949:2002 compliant applications.
- Additional shelves.

GP220A (with accessory floor stand)

- Viewing window doors.
- Through door illumination system.
- Floor stands, with or without castors.
- 3-Phase supply.

A series of robust ovens in vertical or horizontal configuration, designed for heavy use with precision temperature control and industrial grade hinges, door locks, and shelves.

Model	Max temp (°C)	Temp stability (°C)	Temp uniformity (°C)	Heat-up time to max (mins)	Recovery time to max (mins)	Dimensions		Shelves fitted/ accepted	Shelves loading Each/ total (kg)	Doors	Volume (litres)	Air changes /hr	Max power (W)	Power supply
						Internal H x W x D (mm)	External H x W x D (mm)							
GP220A	300	±0.5	±5.0	75	24	610 x 610 x 610	1240 x 862 x 850	3 5	15 45	Single	220	160	3000	Single
GP330A	300	±0.5	±5.0	80	28	915 x 610 x 610	1545 x 862 x 850	4 8	15 60	Single	330	110	4500	Single or 3 phase
GP450A	300	±0.5	±5.0	75	30	1220 x 610 x 610	1850 x 862 x 850	5 11	15 75	Single	450	80	6000	Single or 3 phase
GP220B	300	±0.5	±5.0	75	24	610 x 610 x 610	910 x 1190 x 850	3 15	15 45	Single	220	160	3000	Single
GP330B	300	±0.5	±5.0	80	30	610 x 915 x 610	910 x 1495 x 850	3 5	15 45	Double	330	110	4500	Single or 3 phase
GP450B	300	±0.5	±5.0	75	35	610 x 1220 x 610	910 x 1800 x 850	3 5	20 60	Double	450	80	6000	Single or 3 phase

Minimum operating temperature approximately ambient plus 10°C
Uniformity is measured in an empty chamber with vents closed, after a stabilisation period
Shelf loadings are based on evenly distributed weight

HT Industrial High Temperature Ovens

Standard features

- ✓ 400°C, 500°C or 600°C maximum operating temperature.
- ✓ 28, 95 or 220 or 350 litre capacity.
- ✓ Carbolite 301 controller providing single ramp to set point or countdown process timing.
- ✓ Rugged well proven design.
- ✓ Excellent performance & reliability.
- ✓ Door locks easily operated whilst wearing gloves.
- ✓ Stainless steel liner.
- ✓ Steel section construction.
- ✓ Stainless steel mesh shelves.

Options

specify these at time of order

- Over-temperature protection to DIN 12-880 class 2 (recommended to protect valuable contents & for unattended operation).
- Digital process timer.
- Programmable controller.
- Additional shelves.
- Stoving & curing kit to extract volatile fumes.
- Chart recorders & paper free digital acquisition (DAQ) devices.
- Viewing window.

HT6/350 (with optional chart recorder, door interlock & floor stand)

- Fixed or castor mounted floor stands.
- Standard spares kit.
- Bespoke specifications are available for AMS 2750 (NADCAP) & ISO/TS16949:2002 compliant applications.

Ideal for applications such as tempering, glass annealing, preheating and stress relieving these small scale industrial ovens are able to operate efficiently up to 600°C

Model	Max temp (°C)	Temp stability (°C)	Temp uniformity (°C)	Heat-up time to max (mins)	Recovery time to max (mins)	Dimensions		Shelves fitted/ accepted	Shelf loading Each/ total (kg)	Volume (litres)	Max power (W)	Power supply
						Internal H x W x D (mm)	External H x W x D (mm)					
HT4/28	400	±0.5	±5.0	60	10	305 x 305 x 305	880 x 675 x 885	2 / 2	10 20	28	1000	Single phase
HT4/95	400	±0.5	±5.0	60	10	455 x 455 x 455	1010 x 880 x 1120	3 / 4	15 30	94	3000	Single phase
HT4/220	400	±0.5	±5.0	60	10	610 x 610 x 610	1160 x 1030 x 1280	3 / 4	25 50	227	4500	Single phase
HT 4/350	400	±0.5	±5.0	--	--	700 x 700 x 700	1665 x 1710 x 1200	3 / 4	25 50	343	—	Single phase or 3 phase
HT5/28	500	±0.5	±5.0	60	16	305 x 305 x 305	880 x 675 x 885	2 / 2	10 20	28	2500	Single phase
HT5/95	500	±0.5	±5.0	60	16	455 x 455 x 455	1010 x 880 x 1120	3 / 4	15 30	94	3000	Single phase
HT5/220	500	±0.5	±5.0	60	16	610 x 610 x 610	1160 x 1030 x 1280	3 / 4	25 50	227	4500	Single phase or 3 phase
HT 5/350	500	±0.5	±5.0	--	--	700 x 700 x 700	1665 x 1710 x 1200	3 / 4	25 50	343	—	Single phase or 3 phase
HT6/28	600	±0.5	±5.0	75	20	305 x 305 x 305	880 x 675 x 885	2 / 2	10 20	28	2000	Single phase
HT6/95	600	±0.5	±5.0	70	20	455 x 455 x 455	1010 x 880 x 1120	3 / 4	15 30	94	4500	Single phase or 2 phase
HT6/220	600	±0.5	±5.0	90	20	610 x 610 x 610	1160 x 1030 x 1280	3 / 4	25 50	227	6000	Single phase or 3 phase
HT 6/350	600	±0.5	±5.0	--	--	700 x 700 x 700	1665 x 1710 x 1200	3 / 4	25 50	343	9000	3 phase

Minimum operating temperature approximately ambient plus 50°C
Uniformity values are measured in an empty chamber with vents closed after a period of stabilisation
Shelf loadings are based on evenly distributed weight

LGP Large General Purpose Ovens

Standard features

- ✓ 250°C, 425°C, 625°C or 700°C maximum operating temperatures.
- ✓ 500 to 14000* litre chamber volumes (*custom build).
- ✓ PID digital set and display using the 2216 controller
- ✓ Large capacity, rugged well proven designs.
- ✓ Robust construction, for heavy duty cycles.
- ✓ Efficient air circulation and excellent temperature uniformity from heavy duty impellers.
- ✓ Corrosion resistant ferritic grade 430 stainless steel interior.
- ✓ Steel section & zinc coated, painted mild steel exterior.
- ✓ Single & double door models.
- ✓ Vertical rising door on larger high temperature models.
- ✓ Shelf runners on models up to 1000 litres.
- ✓ Low thermal mass insulation for economical running.
- ✓ Fully adjustable chamber ventilation.

LGP 2/1000 (with accessory options including stoving, curing kit, chart recorder & floor stand)

Options

specify these at time of order

- Over-temperature protection to DIN 12-880 class 2 (recommended to protect valuable contents & for unattended operation).
- Digital process control timers & multi segment programmers are available.
- Bespoke specifications are available for AMS2750 (NADCAP) & ISO/TS16949:2002 compliant applications.
- Access ports for cables & pipes.
- Exhaust proving switch.
- Manual or motorised vertically opening doors.
- Vertical airflow impellers.
- Explosion relief panels.
- Interior light (subject to temperature limitations).
- Standard or heavy duty shelves as required.
- A wide range of sample loading & handling accessories can also be supplied.
- Paperless DAQ (Data Acquisition) graphical recorders available.

Extensive experience in industrial oven and furnace design are combined with the very latest in technology, materials and manufacturing practice to build the standard range of ovens. These also form the basis of numerous bespoke designs that solve specific customers application requirements.

Model	Max temp (°C)	Temp stability (°C)	Temp uniformity (°C) @250°C	Volume (litres)	Heat-up time to max (mins)	Dimensions		Shelves fitted/ accepted	Shelf loading each/ total (kg)	Max power (W)	Power supply
						Internal H x W x D (mm)	External H x W x D (mm)				
LGP 2/500	250	±0.5	±5.0	500	60	800 x 800 x 800	1240 x 1725 x 1375 Single door	0 4	50 200	9000	3 phase
LGP 2/730	250	±0.5	±5.0	730	60	900 x 900 x 900	1265 x 1775 x 1450 Single door	0 4	50 200	9000	3 phase
LGP 2/1000	250	±0.5	±5.0	1000	60	1000 x 1000 x 1000	1375 x 1900 x 1450 Single door	0 4	50 200	12000	3 phase
LGP 2/1500	250	±0.5	±5.0	1500	60	1500 x 1000 x 1000	1900 x 1900 x 1450 Single door	0 7	50 350	15000	3 phase
LGP 2/1750	250	±0.5	±5.0	1750	60	1200 x 1200 x 1200	1600 x 2100 x 1700 Single door	0 5	50 250	18000	3 phase
LGP 2/2160	250	±0.5	±5.0	2160	60	1500 x 1200 x 1200	1900 x 2100 x 1700 Single door	0 7	50 350	18000	3 phase
LGP 2/3370	250	±0.5	±5.0	3370	60	1500 x 1500 x 1500	1900 x 2400 x 2000 Single door	0 7	50 350	24000	3 phase
LGP 2/5830	250	±0.5	±5.0	5830	60	1800 x 1800 x 1800	2200 x 2700 x 2300 Two door	0 9	50 450	35000	3 phase
LGP 2/8000	250	±0.5	±5.0	8000	60	2000 x 2000 x 2000	2400 x 2800 x 2900 Two door	0	— —	42000	3 phase
LGP 2/13820	250	±0.5	±5.0	13820	60	2400 x 2400 x 2400	2800 x 3200 x 3300 Two door	0	— —	60000	3 phase

LGP Large General Purpose Ovens

LGP 2/3200 (with optional process timer)

Model	Max temp (°C)	Temp stability (°C)	Temp uniformity (°C) at250°C	Volume (litres)	Heat-up time to max (mins)	Dimensions		Shelves fitted/ accepted	Shelf loading Each/ total (kg)	Max power (W)	Power supply
						Internal H x W x D (mm)	External H x W x D (mm)				
LGP 4/500	425	±0.5	±5.0	500	60	800 x 800 x 800	1240 x 1725 x 1375 Single door	0	50 200	9000	3 phase
LGP 4/730	425	±0.5	±5.0	730	60	900 x 900 x 900	1265 x 1775 x 1375 Single door	0	50 200	12000	3 phase
LGP 4/1000	425	±0.5	±5.0	1000	60	1000 x 1000 x 1000	1375 x 1900 x 1450 Single door	0	50 200	18000	3 phase
LGP 4/1500	425	±0.5	±5.0	1500	60	1500 x 1000 x 1000	1900 x 1900 x 1450 Single door	0	50 350	21000	3 phase
LGP 4/1750	425	±0.5	±5.0	1750	60	1200 x 1200 x 1200	1600 x 2100 x 1700 Single door	0	50 250	24000	3 phase
LGP 4/3370	425	±0.5	±5.0	3370	60	1500 x 1500 x 1500	1900 x 2100 x 1700 Single door	0	50 350	33000	3 phase
LGP 4/5830	425	±0.5	±5.0	5830	60	1800 x 1800 x 1800	1900 x 2400 x 2000 Two door	0	50 350	48000	3 phase
LGP 4/8000	425	±0.5	±5.0	8000	60	2000 x 2000 x 2000	2200 x 2700 x 2300 Two door	0	50 450	54000	3 phase

Minimum operating temperature approximately ambient plus 35°C
Uniformity values are measured with vents closed in a steady state oven after a stabilisation period.
Shelf loadings are based on evenly distributed weight

LGP Large General Purpose Ovens

LGP 6/3370 (with optional chart recorder)

Model	Max temp (°C)	Temp stability (°C)	Temp uniformity (°C) at250°C	Volume (litres)	Heat-up time to max (mins)	Dimensions		Shelves fitted/ accepted	Shelf loading Each/ total (kg)	Max power (W)	Power supply
						Internal H x W x D (mm)	External H x W x D (mm)				
LGP 6/500	625	±0.5	±5.0	500	75	800 x 800 x 800	1240 x 1725 x 1375 Single door	0	50 200	15000	3 phase
LGP 6/730	625	±0.5	±5.0	730	75	900 x 900 x 900	1265 x 1775 x 1375 Single door	0	50 200	18000	3 phase
LGP 6/1000	625	±0.5	±5.0	1000	75	1000 x 1000 x 1000	1375 x 1900 x 1450 Single door	0	50 200	24000	3 phase
LGP 6/1500	625	±0.5	±5.0	1500	75	1500 x 1000 x 1000	1900 x 1900 x 1450 Single vertical rising	0	50 350	30000	3 phase
LGP 6/1750	625	±0.5	±5.0	1750	75	1200 x 1200 x 1200	1600 x 2100 x 1700 Single vertical rising	0	50 250	36000	3 phase
LGP 6/3370	625	±0.5	±5.0	3370	75	1500 x 1500 x 1500	1900 x 2100 x 1700 Single vertical rising	0	50 350	48000	3 phase
LGP 6/5830	625	±0.5	±5.0	5830	75	1800 x 1800 x 1800	1900 x 2400 x 2000 Single vertical rising	0	50 450	72000	3 phase
LGP 7/500	700	±0.5	±5.0	500	—	800 x 800 x 800	1240 x 1725 x 1375 Single door	0	50 200	18000	3 phase
LGP 7/730	700	±0.5	±5.0	730	—	900 x 900 x 900	1265 x 1775 x 1375 Single door	0	50 200	24000	3 phase
LGP 7/1000	700	±0.5	±5.0	1000	—	1000 x 1000 x 1000	1375 x 1900 x 1450 Single door	0	50 200	30000	3 phase
LGP 7/1500	700	±0.5	±5.0	1500	—	1500 x 1000 x 1000	1900 x 1900 x 1450 Single vertical rising	0	50 350	36000	3 phase
LGP 7/1750	700	±0.5	±5.0	1750	—	1200 x 1200 x 1200	1600 x 2100 x 1700 Single vertical rising	0	50 250	48000	3 phase

Minimum operating temperature 50°C
uniformity values are measured in and empty chamber with vent closed after a stabilisation period & within a volume 100mm from the walls & roof, & 150mm from the floor & doors
Shelf loadings are based on evenly distributed weight

CR Clean Room Ovens

Standard features

- ✓ Designed for operation within Class 100 environments (US FED STD 209E).
- ✓ 250°C maximum operating temperature.
- ✓ 30 to 1790* litre chamber volumes (*custom build).
- ✓ Fully sealed low thermal mass insulation to avoid shedding fibres.
- ✓ Fully enclosed brushless fan motor.
- ✓ Carbolite 301 controller, with single ramp to set-point facility.
- ✓ Smooth easily cleaned gloss epoxy exterior.
- ✓ Polished stainless steel sealed interior enables use of inert gas atmosphere.
- ✓ Perforated stainless steel shelves.
- ✓ Particle free silicone rubber door seal.
- ✓ Membrane control panel with clear bright LED display.
- ✓ Double skin construction for cool safe outer case temperature.
- ✓ Fully adjustable chamber ventilation.

CR/70 & CR/30

All sources of particulate contamination are fully sealed. The sealed stainless steel interior and gloss white epoxy finish make the ovens easily cleaned.

Options

specify these at time of order

- Over-temperature protection to DIN 12-880 class 2 (recommended to protect valuable contents & for unattended operation).
- HEPA filtered airflow available.
- Digital process control timers & multi segment programmers available.
- Paperless DAQ (Data Acquisition) graphical recorders available.
- Top access port for independent thermocouple.
- Cable access port.
- Viewing window door.
- Through door illumination system.
- Stacking frame to enable units to be stacked one upon another.
- Key-lock door.
- Door switch to cut off power when the door is open.
- Fully customised through wall (flange fitted) designs are available.

Model	Max temp (°C)	Temp stability (°C)	Temp uniformity (°C) @250°C	Heat-up time to max (mins)	Recovery time to max (mins)	Dimensions		Shelves fitted/ accepted	Shelf loading Each/ total (kg)	Volume (litres)	Max power (W)	Power supply
						Internal H x W x D (mm)	External H x W x D (mm)					
CR/30	250	±0.2	±3.0	35	4	310 x 310 x 310	655 x 460 x 670	2 / 3	10 20	30	1000	230V Single phase
CR/70	250	±0.2	±3.0	35	4	310 x 470 x 470	655 x 620 x 820	2 / 5	10 30	68	1500	230V Single phase
CR/130	250	±0.2	±4.0	35	4	550 x 470 x 470	895 x 620 x 820	3 / 9	10 40	121	2000	230V Single phase
CR/180	250	±0.2	±5.0	58	5	770 x 470 x 470	1115 x 620 x 820	3 /15	10 50	170	2500	230V Single phase
CR/220	250	±0.2	±5.0	75	4	610 x 610 x 610	1130 x 780 x 850	3 / 5	15 45	227	3000	Single phase
CR/330	250	±0.2	±5.0	80	6	915 x 610 x 610	1440 x 780 x 850	4 / 8	15 60	340	4500	Single phase or 3 phase
CR/450	250	±0.3	±5.0	75	9	1220 x 610 x 610	1750 x 780 x 850	5 / 11	15 75	450	6000	3 phase
CR/840	250	±0.3	±5.0	—	—	1525 x 915 x 610	2050 x 1065 x 850	6	15 —	850	12000	3 phase
CR/1790	250	±0.3	±5.0	—	—	1220 x 1220 x 1220	1750 x 1420 x 1450	5	15 —	1810	18000	3 phase

Minimum operating temperature approximately ambient plus 20°C
Uniformity values are measured in an empty chamber, with vents closed after a stabilisation period
Shelf loadings are based on evenly distributed weight

HTCR High Temperature Clean Room Ovens

Standard features

- ✓ Designed for operation within Class 1000 environments (US FED STD 209E).
- ✓ 400°C, 500°C or 600°C maximum operating temperatures.
- ✓ 28 to 1000 litre chamber volumes.
- ✓ Fully sealed low thermal mass insulation avoids shedding fibres.
- ✓ Fully enclosed brushless fan motor.
- ✓ Carbolite 301 controller, with single ramp to set-point facility.
- ✓ Smooth easily cleaned gloss epoxy exterior.
- ✓ Polished stainless steel sealed interior.
- ✓ Perforated stainless steel shelves.
- ✓ Particle free silicone rubber door seal.
- ✓ Membrane control panel with clear bright LED display.
- ✓ Double skin construction for cool safe outer case temperature.
- ✓ Fully adjustable chamber ventilation.

Options

specify these at time of order

- Over-temperature protection to DIN 12-880 class 2 (recommended to protect valuable contents & for unattended operation).
- Digital process control timers & multi segment programmers available.
- Paperless DAQ (Data Acquisition) graphical recorders available.
- Top access port for independent thermocouple.
- Cable access port.
- Viewing window door.
- Through door illumination system.
- Stacking frame.
- Key-lock door.
- Door switch.
- Fixed or castor mounted floor stands.
- Through wall (flange fitted) as well as fully bespoke designs are available.

HTCR -/95 & HTCR -/28

All sources of particulate contamination are fully sealed, whilst the sealed stainless steel interior and gloss white epoxy finish make the ovens easily cleaned. Bespoke ovens are available with pass through construction or with flanges for through wall mounting into the cleanroom area.

HTCR High Temperature Clean Room Ovens

HTCR 6/95 & HTCR 6/28

Model	Max temp (°C)	Temp stability (°C)	Temp uniformity (°C) @250°C	Heat-up time to max (mins)	Recovery time to max (mins)	Dimensions		Shelves fitted/ accepted	Shelf loading Each/ total (kg)	Volume (litres)	Max power (W)	Power supply
						Internal H x W x D (mm)	External H x W x D (mm)					
HTCR4/28	400	±0.5	±5.0	50	10	305 x 305 x 305	880 x 675 x 885	2 / 2	10 20	30	1000	230V single phase
HTCR4/95	400	±0.5	±5.0	90	10	455 x 455 x 455	1010 x 810 x 1120	3 / 5	15 30	68	3000	230V single phase
HTCR4/220	400	±0.5	±5.0	75	16	61 x 610 x 610	1160 x 1030 x 1280	3 / 5	10 50	121	6000	230V single phase
HTCR4/500	400	±0.5	±5.0	—	—	800 x 800 x 800	1305 x 1115 x 1450	3 / 5	—	500	7500	Single phase or 3 phase
HTCR4/1000	400	±0.5	±5.0	—	—	1000 x 1000 x 1000	1310 x 1530 x 1635	3 / 5	—	1000	12000	3 phase
HTCR5/28	500	±0.5	±5.0	75	16	305 x 305 x 305	880 x 675 x 885	2 / 2	10 20	170	2000	230V single phase
HTCR5/95	500	±0.5	±5.0	110	16	455 x 455 x 455	1010 x 810 x 1120	3 / 5	15 30	227	3000	Single phase
HTCR5/220	500	±0.5	±5.0	105	16	61 x 610 x 610	1160 x 1030 x 1280	3 / 5	10 50	340	4500	Single phase or 3 phase
HTCR5/500	500	±0.5	±5.0	—	—	800 x 800 x 800	1305 x 1155 x 1450	3 / 5	10 20	500	9000	Single phase or 3 phase
HTCR5/1000	500	±0.5	±5.0	—	—	305 x 305 x 305	1310 x 1530 x 1635	3 / 5	15 30	1000	15000	3 phase
HTCR6/28	600	±0.5	±5.0	110	20	455 x 455 x 455	880 x 675 x 885	2 / 2	10 50	450	2000	3 phase
HTCR6/95	600	±0.5	±5.0	110	20	61 x 610 x 610	1010 x 810 x 1120	3 / 5	10 20	850	4500	3 phase
HTCR6/220	600	±0.5	±5.0	120	20	800 x 800 x 800	1160 x 1030 x 1280	3 / 5	15 30	1810	6000	3 phase
HTCR6/500	600	±0.5	±5.0	—	—	800 x 800 x 800	1305 x 1155 x 1450	3 / 5	—	500	12000	Single phase or 3 phase
HTCR6/1000	600	±0.5	±5.0	—	—	1000 x 1000 x 1000	1310 x 1530 x 1635	3 / 5	—	1000	15000	3 phase

Minimum operating temperature is 50°C
Uniformity values are measured in an empty chamber, with vents closed after a stabilisation period
Shelf loadings are based on evenly distributed weight

BESPOKE OVENS

www.carbolite.com

Construction of standard laboratory chambers is only part of the picture for Carbolite. We are regularly asked to design chambers either to meet the requirements of specific customers applications, or to enable the use of standard test methods such as those for cable insulations testing.

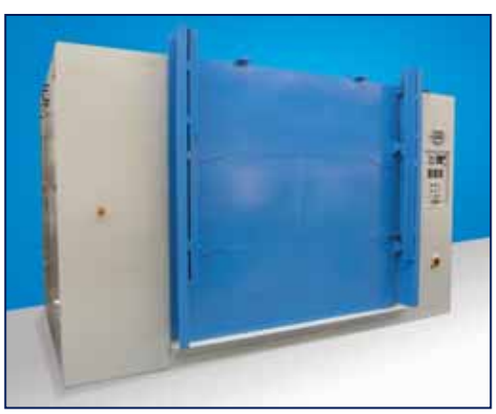
Similarly when customer's must perform operations within standards compliant regimes such as AMS 2750D or NADCAP for heat treatment applications, then Carbolite has the experience and skills to modify our standard designs or engineer bespoke solutions in order to achieve the appropriate levels of compliance.

Perhaps most frequent of all is the situation where customers see a standard model but simply require it a little larger or smaller, or to reach a higher temperature, or to have modified temperature control or data recording capabilities. So if you cannot see precisely what you need in our standard range simply get in touch.

THREE CUSTOM MADE CYLINDER WARMING OVENS EACH DESIGNED TO OPERATE IN A ZONE 2 HAZARDOUS AREA & CERTIFIED TO EU ATEX DIRECTIVE 94/9/EC. EACH CHAMBER ACCEPTS FIVE 1620x255mm CYLINDERS

A BESPOKE LGP OVEN FOR HEAT TREATMENT OF LASERJET PRINTER IMAGING DRUMS

A BESPOKE 60 LITRE PROGRAMMABLE GAS COOLED CHAMBER WITH AN OPERATING RANGE OF -150°C TO +300°C, EQUIPPED WITH DUAL 140mm ACCESS PORTS, DESIGNED FOR AEROSPACE COMPONENT TESTING



CUSTOM BUILT 400°C LGP SERIES OVEN WITH PROGRAMMABLE TEMPERATURE CONTROL, TRACKING OVER-TEMPERATURE PROTECTION BUILT TO EN1539 TYPE A(I), SAFETY REQUIRMENTS - FOR 'DRYERS & OVENS IN WHICH FLAMMABLE SUBSTANCES ARE RELEASED'

A BESPOKE TROLLEY LOADING 200°C LGP OVEN WITH 20,000 LITRE CAPACITY

A PASS THROUGH CLEAN ROOM OVEN WITH CUSTOM LOADING SYSTEM FOR MEDICAL DEVICE MANUFACTURE

CUSTOM BUILT 300°C LGP OVEN WITH DROP QUENCH

A FULLY BESPOKE 200°C MODIFIED ATMOSPHERE OVEN FOR CONTACT LENS MANUFACTURE, THE SEALED INTERIOR MEANS THAT OXYGEN LEVELS BELOW 50PPM CAN BE ACHIEVED

GCC Gas Cooled Chambers

Standard features

- ✓ Operating temperature of -60°C to +200°C
- ✓ 30 to 120 litre chamber volumes
- ✓ Programmer controlled direct injection of liquid gas for extremely rapid temperature cycling
- ✓ Programmable temperature control using the 3216P1 controller, offering up to 8 ramps & 8 dwells.
- ✓ CO_2 injection system comprising flexible high pressure hose incorporating, excessive pressure protective bursting disc
- ✓ Rear mounted fan provides efficient horizontal airflow throughout the chamber
- ✓ Internal chamber & air guides fabricated from 304 grade stainless steel
- ✓ Externally welded seams prevent moisture build up in insulation during subzero operation
- ✓ Low thermal mass insulation for economical running

Options

specify these at time of order

- Over-temperature protection to DIN 12-880 class 2 (recommended to protect valuable contents & for unattended operation)
- 300°C optional maximum temperature
- Optional liquid nitrogen injection system to reach -150°C (including 2m insulated stainless steel pipe & pressure relief valves)
- Access ports for cables & pipes
- Programmable controls with additional segments & multi-program capability
- Interior light (subject to temperature limitations) or through window illumination kit
- Additional shelves as required
- A wide range of sample loading & handling accessories can also be supplied
- Paperless DAQ (Data Acquisition) graphical recorders available

GCC/30 WITH OPTIONAL WINDOW DOOR
(illumination would be through window & not in chamber interior)

Direct injection liquefied gas cooling using liquid CO_2 to achieve -60°C (or optionally using liquid nitrogen to achieve -150°C) & rapid heating to 200°C as standard (or optionally 300°C) all under the control of a sophisticated 8 segment pair controller. Enables the most rigorous temperature test profiles to be used for accelerated age testing or environmental simulation.

Model	Temp range (°C)	Temp stability (°C)	Temp uniformity (°C)	Volume (litres)	Heat-up time to max (mins)	Cool-down time to -60°C (mins)	Dimensions		Shelves fitted/ accepted	Shelf loading Each/ total (kg)	Max power (W) @ 200°C	Power supply
							Internal H x W x D (mm)	External H x W x D (mm)				
GCC/30	-60 to 200	±0.5	±5.0	30	26	12	310 x 300 x 330	570 x 765 x 770	2 3	10 20	750	Single phase
GCC/60	-60 to 200	±0.5	±5.0	60	26	12	41 x 400 x 380	670 x 865 x 870	2 5	10 30	1000	Single phase
GCC/120	-60 to 200	±0.5	±5.0	120	26	12	660 x 500 x 380	920 x 965 x 870	2 9	10 40	1500	Single phase

Uniformity values are measured with vents closed in a steady state chamber after a stabilisation period.
Shelf loadings are based on evenly distributed weight.
Gas cylinders & Dewars are not included as part of the standard offer.

MFS/1 Minimum Free Space Ovens

Standard features

- ✓ Precise digital set & display of temperature using the 2132 controller.
- ✓ For the determination of moisture in coal and coke by drying in a nitrogen atmosphere.
- ✓ Designed to meet the requirements of BS 1016: - 104.1:1999 Parts, 1 3 & 4 / ISO 11722:1999.
- ✓ Heated by resistance wire elements embedded in a refractory ceramic slab.
- ✓ Corrosion resistant aluminium chamber with good temperature uniformity.
- ✓ Side hinged door with gas tight seal & easy one handed operation.
- ✓ Flow-meters to monitor gas flow & chamber seal integrity.

Options

specify these at time of order

- Welded steel desiccator with a quick release door & gas inlet & outlet.
- An MFS is also available configured for ASTM 3173-03
- Models available for alternative mains supply voltages.

MFS/1

Coal & Coke Test Range

Contact Carbolite for more information on the products in our coal & coke test range.

- Ashing furnaces
- Moving wall coke ovens
- Ash fusibility determination

Model	Max temp (°C)	Temp stability (°C)	Temp uniformity (°C) @250°C	Dimensions			Max power (W)	Power supply
				Block H x W x D (mm)	Bath External H x W x D (mm)	Control Module H x W x D (mm)		
MFS/1	250	±0.5	±5.0	100 x 200 x 300	153 x 459 x 358	120 x 263 x 212		230V single phase

Uniformity is measured in an empty chamber after a stabilisation period

PO/350 Thermoplastic Sheet Preheating Oven

PO/350 (with optional window & stand)

Standard features

- ✓ 50°C to 250°C operating temperature range.
- ✓ 301 PID temperature controller with digital set & display.
- ✓ Ramp to set-point or process control timer.
- ✓ Forced air circulation for optimum temperature uniformity.
- ✓ Top mounted fan.
- ✓ Single drop down door.
- ✓ Single shelf.
- ✓ 430 Grade corrosion resistant ferritic stainless steel chamber.
- ✓ Heating from mineral insulated metal sheathed elements.
- ✓ 50mm top vent.

Options

specify these at time of order

- Independent over-temperature protection with digital set & display.
- Digital process timer.
- Interior lighting.
- Fixed or castor mounted floor stands.

This model is an application specific design specifically intended for the softening of thermoplastic sheet materials held in frames prior to draping over a vacuum forming mould. This configuration has found particular favour for use with material used in fabricating prosthetic limbs.

Model	Max temp (°C)	Temp stability (°C)	Temp uniformity (°C)	Heat-up time to max (mins)	Recovery time to max (mins)	Dimensions		Shelves	Volume (litres)	Max power (W)	Weight (kg)	Power supply
						Internal H x W x D (mm)	External H x W x D (mm)			Holding power @max (W)		
PO/350	300	±1	±7	58	-	380 x 1200 x 760	730 x 1490 x 920	Single shelf 760 x 1200	346	6000 -	119	415V 3 phase

Uniformity is measured in an empty chamber with vents closed, after a stabilisation period

DO/200 Thermoplastic Draping Oven

Standard features

- ✓ 50°C to 300°C operating temperature range.
- ✓ 301 PID temperature controller with digital set & display.
- ✓ Ramp to set-point or process control timer.
- ✓ Forced air circulation for optimum temperature uniformity.
- ✓ 15W internal chamber illumination.
- ✓ Single pair of shelf runners supplied to accept a single clamp frame 406 x 406mm.
- ✓ Heating from mineral insulated metal sheathed elements.

Options

specify these at time of order

- Independent over-temperature protection with digital set & display.
- Digital process timer.
- Fixed or castor mounted floor stands.

DO/200

This model is an application specific design specifically intended for the softening of thermoplastic sheet materials held in frames prior to draping over a vacuum forming mould. This configuration has found particular favour for use with material used in fabricating prosthetic limbs.

Note:

The oven requires but does not include as standard a 'draping frame' that is compatible with the work being undertaken.

Model	Max temp (°C)	Temp stability (°C)	Temp uniformity (°C) @max temp	Heat-up time to max (mins)	Recovery time to max (mins)	Dimensions		Shelves	Volume (litres)	Max power (W) Holding power @max (W)	Weight (kg)	Power supply
						Internal H x W x D (mm)	External H x W x D (mm)					
DO/200	300	±0.5	±3.5	58	10	700 x 592 x 520	920 x 965 x 670	1 set of runners for frames 406 x 406	215	2250 1160	75	230V or 110V single phase

Uniformity is measured in an empty chamber with vents closed, after a stabilisation period

TLD Rapid Cooling High Temperature Ovens

Standard features

- ✓ 400°C maximum operating temperature.
- ✓ 3508P1 Programmable controller providing automatic activation of the cooling blower.
- ✓ Overtemperature protection with digital set & display.
- ✓ Horizontal forced air circulation from rear mounted fan.
- ✓ Excellent performance & reliability.
- ✓ Door locks easily operated whilst wearing gloves.
- ✓ Stainless steel liner.
- ✓ Steel section construction.
- ✓ Stainless steel mesh shelves.

Options

specify these at time of order

- Independent over-temperature protection with digital set & display.
- Digital process timer.
- Programmable controller.
- Additional shelves.
- Stoving & curing kit to extract volatile fumes.
- Chart recorders & paper free digital acquisition (DAQ) devices (externally mounted for the TLD/3).

TLD/3

Ideal for applications such as tempering, glass annealing, preheating and stress relieving these small scale industrial ovens are able to operate efficiently up to 400°C.

These ovens are frequently used for annealing thermo-luminescent dosimeters.

Model	Max temp (°C)	Temp stability (°C)	Temp uniformity (°C)	Heat-up time to max (mins)	Heating/ cooling rate (°C/mins)†	Dimensions		Shelves fitted/ accepted	Shelves loading Each/ total (kg)	Volume (litres)	W't (kg)	Max power (W)	Power supply
						Internal H x W x D (mm)	External H x W x D (mm)						
TLD/3	**400**	±1	±5.0	60	4	150 x 150 x 100	530 x 370 x 500	2 / 2	—	3	26	1000	Single phase

Minimum operating temperature 50°C.
Uniformity values are measured in an empty chamber with vents closed after a period of stabilisation.
Shelf loadings are based on evenly distributed weight.
† Based upon cooling an empty chamber

HTMA HIGH Temperature Modified Atmosphere Ovens

Standard features

- ✓ 400°C, 500°C or 600°C Operating temperatures.
- ✓ 28, 95 & 220 Litre capacities.
- ✓ Digital PID temperature control using 301 controller including over-temperature protection.
- ✓ Rear mounted fan & side air guides give horizontal 'airflow'.
- ✓ Fully seam welded to contain modified atmosphere.
- ✓ Manual gas control via needle valves & flowmeters (nickel brass).
- ✓ Corrosion resistant, ferritic grade 430, stainless steel interior with perforated non-tip shelves & runners.
- ✓ Copper pipe-work with brass flow-meter & solenoid valves.
- ✓ Single side hinged door, with metal heat seal & rubber gas tight seal, closed using none slam lever switch.
- ✓ Suitable for continuous operation (see options*).
- ✓ Double skin construction for cool, safe, outer case.
- ✓ Hard wearing, zinc coated & stoved epoxy polyester coated exterior.

HTMA -/28 & HTMA -/95

Options

specify these at time of order

- Automatic gas control (requires a 3508 series programmable controller).
- Non-automatic electronic gas control using 2x flow-meters & solenoid valves.
- Stainless steel pipe-work with brass flow-meter & solenoid valves.
- Stainless steel pipe-work, flow-meter & solenoid valves.
- A range of sophisticated digital control & multisegment programmers are available.
- RS232 / RS485 communications.
- Fixed or castor mounted floor stands.

A range of gas tight high temperature ovens for use with inert atmospheres in a batch production environment.

Model	Max operating temp (°C)	Heat-up time (mins)*	Recovery time (mins)*	Dimensions		Shelves fitted/ accepted	Volume (litres)	Max power (W)	Weight (kg)	Power supply
				Internal H x W x D (mm)	External H x W x D (mm)					
HTMA 4/28	400	50	10	305 x 305 x 305	880 x 675 x 885	2	28	1000	73	220/240V single phase
HTMA 4/95	400	75	16	455 x 455 x 455	1010 x 880 x 1120	3 / 4	95	3000	99	220/240V single phase
HTMA 4/220	400	120	20	610 x 610 x 610	1160 x 1030 x 1280	3 / 4	220	3000	179	220/240V single phase
HTMA 5/28	500	50	10	305 x 305 x 305	880 x 675 x 885	2	28	2000	73	220/240V single phase
HTMA 5/95	500	75	16	455 x 455 x 455	1010 x 880 x 1120	3 / 4	95	3000	99	220/240V single phase
HTMA 5/220	500	120	20	610 x 610 x 610	1160 x 1030 x 1280	3 / 4	220	4500	179	220/240V single phase
HTMA 6/28	600	50	10	305 x 305 x 305	880 x 675 x 885	2	28	2000	73	220/240V single phase
HTMA 6/95	600	75	16	455 x 455 x 455	1010 x 880 x 1120	3 / 4	95	4500	99	220/240V single phase
HTMA 6/220	600	120	20	610 x 610 x 610	1160 x 1030 x 1280	3 / 4	220	6000	179	220/240V single phase

Uniformity is measured in an empty chamber with vents closed, after a stabilisation period
* Nominal values based upon a representative sample of products

SCBO Cell Block Rubber & Plastics Cable Ageing Ovens

SCB09/9

Standard features

- ✓ Designed for long term aging tests for cables to IEC 60811 & other technically equivalent standards.
- ✓ Control range 40°C to 200°C.
- ✓ Instruments with up to 9 independent 2132 temperature controllers.
- ✓ Controller resolution of 0.1°C.
- ✓ Up to 65°C temperature difference is achievable between blocks.
- ✓ Independent cell enclosures prevent cross-contamination of volatile components between specimens.
- ✓ Instruments with 3, 6, 9 or 12 independent test cells.
- ✓ Cell dimensions 80mm diameter x 300mm deep.
- ✓ Independent airflow control from 8 to 20 air changes per hour.
- ✓ Multi-stage centrifugal blower supplies airflow to test cells.
- ✓ Each cell lid carries a work support frame able to accept up to 24 samples (3 levels with 8 per level).
- ✓ 10cm samples are easily accommodated.

Options

specify these at time of order

- Paperless DAQ (Data Acquisition) graphical recorders available.
- Castor mounted frame.

Model	Max temp (°C)	Temp stability (°C)	Temp uniformity (°C) @250°C	Dimensions External H x W x D (mm)	Number of test cells	Number of blocks	Number of Controllers	Max power (W)	Power supply
SCBO3/1	200	±0.5	±5.0	1560 x 400 x 700	3	1	1	1500	230V single phase
SCBO3/3	200	±0.5	±5.0	1700 x 400 x 980	3	1	3	1500	230V single phase
SCBO6/2	200	±0.5	±5.0	1560 x 640 x 700	6	2	2	3000	230V single phase
SCBO6/6	200	±0.5	±5.0	1700 x 640 x 980	6	2	6	3000	230V single phase
SCBO9/3	200	±0.5	±5.0	1560 x 980 x 700	9	3	3	4500	230V single phase
SCBO9/9	200	±0.5	±5.0	1700 x 980 x 980	9	3	9	4500	230V single phase
SCBO12/4	200	±0.5	±5.0	1700 x 980 x 1030	12	4	4	6000	single phase or 3 phase

MBB High Temperature Block Baths

Standard features

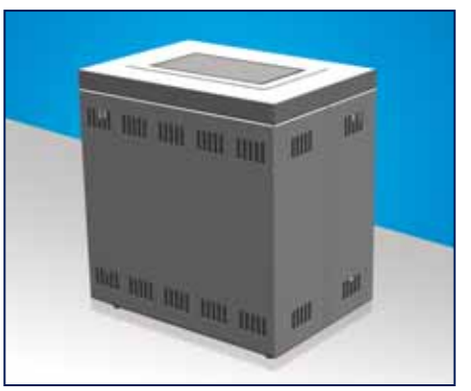
- ✓ Custom drilled blocks to your precise requirements.*
- ✓ Direct heating to 250°C or 450°C.
- ✓ For precise heating of test samples, thermocouples & thermostats.
- ✓ Three block sizes are available.
- ✓ Digital temperature control and display from a 2132 controller.
- ✓ Separate control module on 2 metre flexible conduit.

CBO-301 CONTROL MODULE

Options

specify these at time of order

- Three blank block sizes are available.
- Multiple segment programmable controllers are available.
- Factory issued 3 point calibration certificates can be supplied.
- UKAS traceable 3 point calibration certificates can be supplied.
- Bespoke modifications to enable the block baths to be integrated into automated test & calibration apparatus.



MBB253 / MBB453

MBB251 / MBB451

MBB251 / MBB451

MBB252 / MBB452

Model	Max temp (°C)	Temp stability (°C)	Temp uniformity (°C) @250°C	Dimensions			Max power (W)	Power supply
				Block H x W x D (mm)	Bath External H x W x D (mm)	Control Module H x W x D (mm)		
MBB251	250	±0.5	±2.0	100 x 200 x 300	153 x 459 x 358	120 x 263 x 212	1250	230V single phase
MBB252	250	±0.5	±2.0	200 x 100 x 300	233 x 459 x 253	120 x 263 x 212	667	230V single phase
MBB253	250	±0.5	±2.0	300 x 100 x 200	333 x 459 x 253	120 x 263 x 212	1500	230V single phase
MBB451	450	±0.5	±2.0	100 x 200 x 300	153 x 459 x 358	120 x 263 x 212	2400	230V single phase
MBB452	450	±0.5	±2.0	200 x 100 x 300	233 x 459 x 253	120 x 263 x 212	2400	230V single phase
MBB453	450	±0.5	±2.0	300 x 100 x 200	333 x 459 x 253	120 x 263 x 212	2400	230V single phase

* The baths include aluminium blocks drilled with plain holes to the customer's specification. Please supply the numbers, dimensions and characteristics of the holes that are required. The standard price includes any permutation of up to 3 hole sizes.

Temperature Control Options

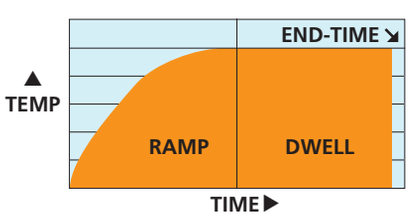
(📌 Specify at the time of order)

Temperature Controllers at a Glance

Model	PID	Process timer	Real time clock	Programs	Segments per program	Programs can be linked	Events	Communications
TLK	✓	✘	✘	✘	✘	n/a	None	✘
301 Standard Controller	✓	✓	✘	✘	✘	n/a	None	Optional RS232
2216	✓	Optional	✘	✘	✘	n/a	1	Optional RS232
3216P1	✓	Optional	✘	1	8 pairs	✘	1	Optional RS232 or RS485 or analogue
3216P5	✓	Optional	✓	5	8 pairs	✘	8	Optional RS232 or RS485 or analogue
3508P1	✓	Optional	✓	1	20	✓	8	Optional RS232 or RS485 or analogue
3508P10	✓	Optional	✓	10	500	✓	8	Optional RS232 or RS485 or analogue
3508P25	✓	Optional	✓	25	500	✓	8	Optional RS232 or RS485 or analogue

TLK Controller

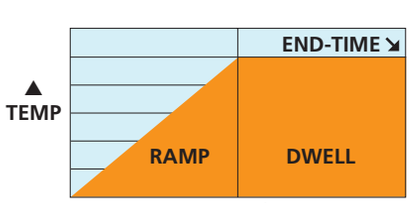
The most basic controller in the range, the TLK is used for the Apex ovens and is offered as the entry level option throughout the Peak series chambers.



301 Controller

This is the standard PID controller for all of the Peak series, Laboratory and Industrial High Temperature and Clean Room ovens.
It enables setting of a single ramp rate to set point and incorporates a process timer. Setting is via a smooth wipe clean membrane panel with large bright display.

The 301 provides precise PID (Proportional Integral Derivative) control meaning that ramp rates and set points are very closely adhered to and the risk of overshoot at the end of the ramp is largely avoided.



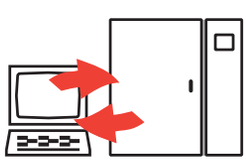
Options

Over-temperature Control 📌

This has a variable setpoint to protect either the chamber or the load. Selection of this option provides an additional independent thermocouple and protection circuit that is fully integrated with the regular 301 controller. Whilst all Carbolite chambers are designed to fail safe in the event of a controller malfunction, over-temperature protection is strongly recommended for unattended operation or where valuable loads are to be processed.

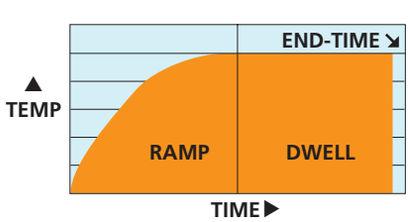
RS232 Communications 📌

This permits a single controller to communicate with a computer and requires but does not include suitable PC based software (for example iTools) and connection cables.



2216 Controller

A simple controller that is supplied as standard on the LGP Large General Purpose ovens range. This controller provides simple ramp to set-point functionality.

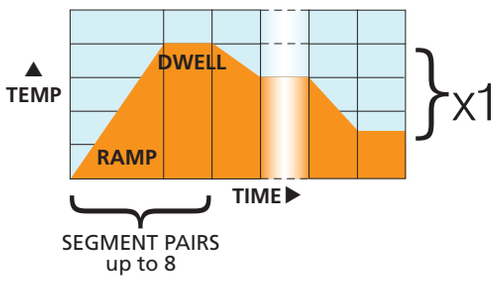


Temperature Control Options

(📌 Specify at the time of order)

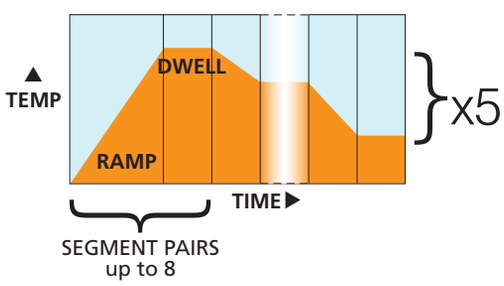
3216P1 📌

This controller offers programmable control using up to 8 segments, each segment comprising a ramp followed by dwell. The dwell may be set to zero time.



3216P5 📌

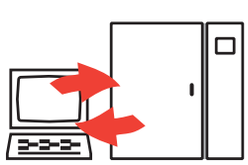
This controller has all the functionality of the 3216P, with the additional capability of being able to store and retrieve up to 5 separate programs.



Options

RS232 & RS484 Communications 📌

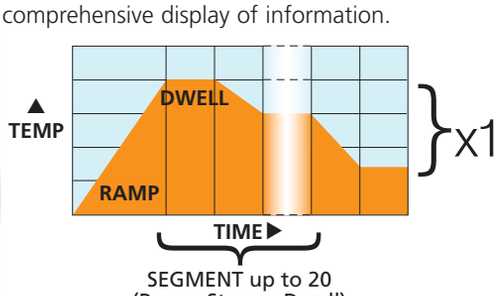
The 3216P1 and 3216P5 controllers both have the option to add RS232 or RS485 communications. This requires but does not include suitable PC based software (for example iTools) and connection cables.



RS232 permits a single controller to communicate with a computer.
R485 permits multiple controllers to communicate with a single computer.

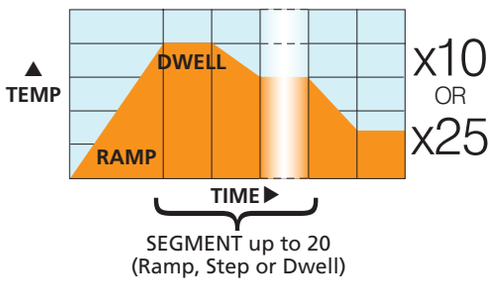
3508P1 📌

This controller offers programmable control in which 20 segments may be set as ramp, step or dwell. (where 'step' is an immediate rise or fall in setpoint temperature). The 3508 series provide a more comprehensive display of information.



3508P10 & 3508P25 📌

The 3508P10 and 3508P25 have all of the functionality of the 3508P1with the additional capability to store and retrieve 10 and 25 programs respectively. Additionally individual programs can be linked together into longer or more complex sequences.

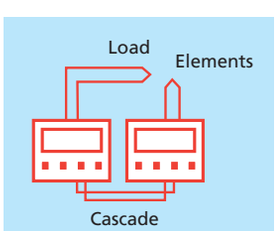


Options

Over-temperature Control 📌

This has a variable setpoint to protect either the chamber or the load. Where the main controller is from the 3216 or 3508 series this is provided by an addition of an independent 2132 controller. Whilst all Carbolite chambers are designed to fail safe in the event of a controller malfunction over-temperature protection is strongly recommended for unattended operation or where valuable loads are to be processed.

Cascade Control 📌



This should be considered for even more precision and ability to counteract many of the performance effects that result from placing different loads into the chamber. In particular faster heating of loads which have high thermal capacity is possible. A standard controller operates by sensing the temperature close to the elements. In cascade control the primary controller's operation is modified by a second nonprogrammable 3216 controller, which is used to sense the temperature of the load. It is essential that the primary controller is one of the 3508 series

Chart Recorders & DAQs

(📌 Specify at the time of order)

Chart Recorders & DAQs (Data Acquisition Devices) 📌

This is just a small selection of the options that are available for recording data from Carbolite furnaces. If you require advice please contact Carbolite for further information.

NOTE: Please confirm with Carbolite whether the chart recorder can be fitted within the standard oven case, in some instances it may require mounting in a separate case.

6100 Series Digital Data Acquisition Recorder & Display 📌

Model	Channels	Display Screen	Memory For History Mb	Inputs	USB Ports	Serial Ports	Timers	Event Triggers
6100E	6	5.5" VGA	6	6	1	✘	6	3
6100A	6	12.1" XGA	32 or 96	up to 18	up to 3	up to 2	12	up to 96
6100A	12	12.1" XGA	32 or 96	up to 18	up to 3	up to 2	12	up to 96

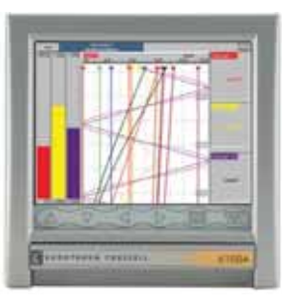
4102 Series 100mm Wide Compact Strip Chart Recorder 📌

The 4102 series are compact and economical 100mm strip chart recorders, providing recording for up to 4 (continuous pen) or 6 (multi-point) process variables.

A series of digital data acquisition recorders that able to function as stand alone devices or be integrated into wider network systems. They have a total sample rate of 125ms for up to 48 input channels. Input channels are freely configurable to suit your process requirements. Each instrument has an intuitive touch screen display to enable operators to clearly view process data in varying formats.

4103 Series 100mm Wide Strip Chart Recorder 📌

The 4103 is a high specification, 100mm strip chart recorder, providing continuous recording for up to 6 process variables. Information such as channel descriptor, alarm set point and scale information can be viewed on a high resolution VFD display.



All have onboard Flash data storage capability, Ethernet communication and choice of Compact Flash or SD Card. Data is stored in a tamper resistant binary format that can be used for secure, long term records of your process. Recording can be to internal flash memory, removable media and remote FTP (simultaneously if required) Data protection includes Audit Trail for 21CFR Part 11 and NADCAP applications, with recorded login, use of unique usernames and passwords. Event triggers such as batch start, alarm and percentage full level for media can be programmed.

Model	Channels (pens)	User prog-rammable	Accuracy To paper (%)	Speed mm/hr 📌	Annotation 📌
4102C	1	✘	0.25	10, 30, 60, 120 or 5, 20, 60, 120 or 20, 30, 60, 120 or 30, 60, 120, 300 or	Extra option
4102C	2	✘			Extra option
4102M	6	✘			Standard
4103C	1	✓		Software selectable	Standard
4103C	2	✓			Standard
4103M	6	✓			Standard

iTools Software

A versatile suite of software which allows Carbolite ovens that have been fitted with appropriate digital communications hardware to be set-up, recorded and monitored from a PC. The supplied license is for a single PC to communicate with one controller using RS232 or with many controllers using RS485.
NOTE: The 301 controller is not compatible with RS485 communications.

Certificate & Standards

(📌 Specify at the time of order)

Calibration Certificates

A number of calibration options can be supplied each of which is available with either a factory certificate of calibration or a certificate from a UKAS accredited laboratory and hence traceable to a UK National Standard.

Factory issued certificate for the thermocouple only calibrated at 3 temperature points 📌

UKAS traceable certificate for the thermocouple only calibrated at 3 temperature points 📌

Factory issued certificate for the temperature controller (or temperature display) 3 point calibration 📌
At 3 points of our choosing.

UKAS traceable certificate for the temperature controller (or temperature display) 3 point calibration 📌
At 3 points of our choosing.

Factory issued certificate for the specific individual combination of thermocouple & temperature controller (or temperature display) 3 point calibration 📌

UKAS traceable certificate for the specific individual combination of thermocouple & temperature controller (or temperature display) 3 point calibration 📌

For Advice and Specifications to Comply with NADCAP (AMS 2750D) for Heat Treatment Applications

Please contact Carbolite for advice on this or any other standards compliance issues.

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