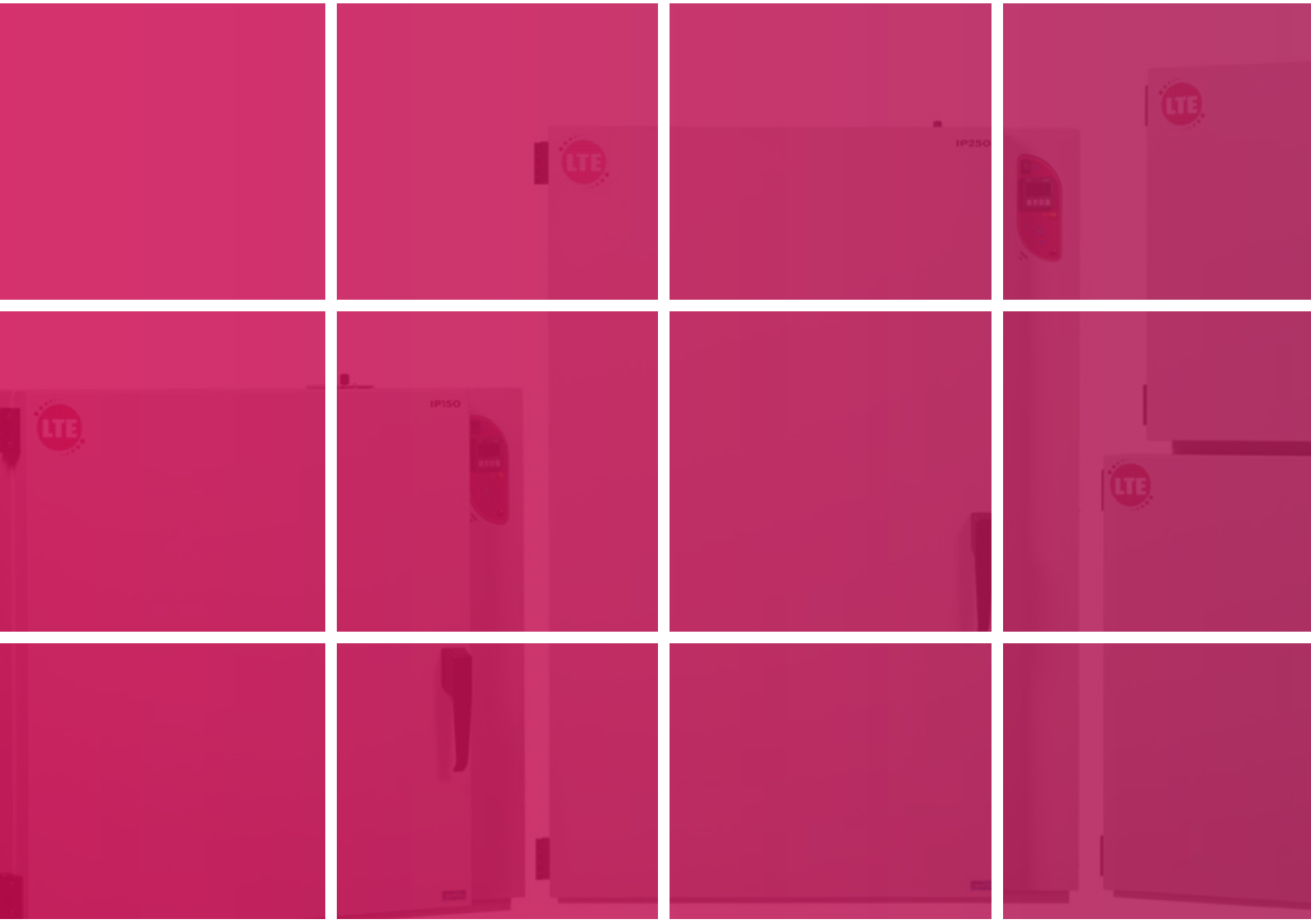
Thermal Products



SCIENTIFIC | MEDICAL | SERVICE

Thermal Products

Established since 1947, LTE Scientific is one of the UK's leading manufacturers of high quality laboratory and process equipment. Our products are globally renowned for their reliability, performance and overall value for money.

We are ISO9001 accredited and all our products carry the relevant CE mark.

This brochure provides details on our wide range of thermal products, which are used in laboratories and industry around the world.

OTHER BROCHURES FROM LTE INCLUDE:

- Laboratory Autoclaves
- Ecotech Autoclaves
- Environmental/Stability Rooms and Chambers
- Porous Load Sterilizers
- Scope-Store Endoscope Storage Systems
- Solution and Blanket Warming Cabinets
- LTE Service Centre

If you require more information on the products in this brochure, or would like details on any other product in our range, please visit our website or contact our sales office on **01457 876221**.

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OP Series Ovens

Choice of PID temperature control systems

Temperature range 40 to 250°C

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Communication port options

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Stainless steel radiused interiors

Anti-bacterial epoxy powder coating

Adjustable vent

Choice of natural convection or fan circulated

Sizes from 60 to 250 litres

The OP Series of ovens offers maximum flexibility and unparalleled performance for the ever-increasing demands of today's laboratory and process facility. Traditional quality and modern manufacturing techniques linked with LTE's built-in reliability mean that the OP Series represents excellent value.

Flexibility – The OP Series is available in 4 sizes from 60 to 250 litres. Customers can choose between fan circulated or natural convection options, plus there is a choice of PID control systems to suit most applications as detailed below:

"U" Models: This Uni-program system offers single temperature selection and control at the push of a button. Following a mains power failure, the controller will automatically re-instate.

"M" Models: Our multi-program controller will allow upto 8 multiple-step cycles to be stored in the memory at any one time. It also incorporates a selectable temperature ramping function, which allows controlled temperature rise and fall rates to be programmed into a cycle. At the end of a program sequence, the controller can be programmed to stop or repeat the sequence again. The repeat function can be programmed for a specified number of repeats or it can repeat continuously until interrupted. Following a mains power failure, "M" models have 3 recovery options (cycle hold, start cycle from the beginning or re-start cycle from point of interruption).

RS232 or RS485 communication ports can be added to all "M" models.

Performance – Fast heat-up times, almost undetectable overshoot and superb accuracy (see table on page 4) make the OP Series a class-leading product.

All OP Series ovens incorporate a manual reset over-temperature cut-out, in line with IEC1010-2-010

TECHNICAL AND ORDERING INFORMATION:

OP Series : 40 to 250°C*

Model and Cat. No		Cap, litres	Air Circulation	Internal Dims, HxWxD, mm	External Dims, HxWxD, mm	Fluctuation ± %	Spatial Variation (empty) ± %*	Shelves/ positions/ mass, kg	Power Rating, Watts
"U" Models	"M" Models								
OP60-U	OP60-M	60	Natural convection	400 x 400 x 400	590 x 735 x 575	Fan Circ 0.25	3.5	2/6/50	850
OP60-UF	OP60-MF		Fan circulation				1.0		1000
OP100-U	OP100-M	100	Natural convection	500 x 500 x 400	690 x 835 x 575		3.5	2/8/60	1000
OP100-UF	OP100-MF		Fan circulation				1.5		1300
OP150-U	OP150-M	150	Natural convection	600 x 500 x 500	790 x 835 x 675		3.5	2/10/80	1500
OP150-UF	OP150-MF		Fan circulation			Nat. Conv. 0.5	1.5		1600
OP250-U	OP250-M	250	Natural convection	1000 x 500 x 500	1190 x 835 x 675		4.0	3/18/120	1950
OP250-UF	OP250-MF		Fan circulation				2.0		2500

* Performance tests carried out in ambient temperatures of 20 to 22°C

OPTIONS AND ACCESSORIES:

Cat. No.	Description	Cat. No	Description
OA001	0-24hr timer ("U" models only)	SC002	12-point test certificate
OA002	Independent printer	SH002	Shelf for 60-litre models
OA005	Access port, 18mm	SH003	Shelf for 100-litre models
OA006	Stacking kit (except 250 litre size)	SH004	Shelf for 150-litre models
SC001	Calibration certificate	SH005	Shelf for 250-litre models

Need a larger capacity? Call our sales office on **01457 876221** for details of units up to 1000-litres.

Drying Cabinets

LTE offers a wide selection of laboratory drying cabinets. From bench and wall-mounted versions to large floor-standing models. We also offer a range of energy efficient drying cabinets. With capacities from 100 to 1000 litres, there will be a model to suit your particular requirements.

FILTERED AIR DRYING CABINET

- The fine filter on this model reduces the amount of contamination entering the cabinet, thereby ensuring a cleaner environment for freshly washed items.
- The temperature is thermostatically controlled and the system is protected by an over-temperature cut-out device.

ECONOMY DRYING CABINET

- This range of large capacity cabinets provides efficient drying at an economical price.
- All models have heaters situated below a perforated base plate and are vented from the top. Fan extraction models draw the moist air upwards and direct it to the outside.
- Temperature control is by means of an energy regulator. Single or double toughened glass doors are provided, dependent on the model chosen.

SLIDING DOOR DRYING CABINET

For straightforward natural convection drying, this bench or wall-mounted range represents excellent value for money. There is a choice of stainless steel or epoxy coated finish.

ECO-DRYING CABINET

The Eco-DC range of energy efficient drying cabinets has been designed to reduce typical energy usage by up to 50% when compared to traditional drying cabinets. Insulation is provided to 5 sides of the cabinet, and temperature is electronically controlled and digitally displayed. Data sheets are available on request.

TECHNICAL AND ORDERING INFORMATION:

Drying Cabinet Type	Cat No:	Cap. Litres	Air Circulation	Max Temp. °C	Internal Dims. HxWxD (mm)	External Dims. HxWxD (mm)	Shelves/ positions	Mass kg	Power Rating, (Watts)
Filtered Air	322/0105/00	534	Fan circulated	65	1115 x 785 x 610	1380 x 790 x 640	3/6	49	3000
Economy	322/0106/00	545	Natural convection	65	1480 x 625 x 590	1630 x 635 x 610	4/28	73	1500
	322/0108/00		Fan extracted						
Economy	322/0107/00	1000	Natural convection	65	1480 x 1150 x 590	1630 x 1160 x 610	4/28	124	2500
	322/0109/00		Fan extracted						
Sliding Door Epoxy Coated	322/0103/00	100	Natural convection	85	425 x 778 x 302	520 x 780 x 330	2/21	16	650
	322/0104/00	180			555 x 995 x 325	650 x 1000 x 350	2/35	27	1150
Sliding Door Stainless Steel	322/0101/00	100	Natural convection	85	425 x 778 x 302	520 x 780 x 330	2/21	16	650
	322/0102/00	180			555 x 995 x 325	650 x 1000 x 350	2/35	27	1150
Eco-DC	DC/LOW/100	100	Natural convection	85	425 x 778 x 302	630 x 870 x 375	2/21	25	650
	DC/LOW/180	180			555 x 995 x 325	760 x 1090 x 398	2/35	38	1150

Filtered Air Drying Cabinet

Economy Drying Cabinet - 545L

Economy Drying Cabinet - 1000L

Sliding Door Drying Cabinet

IP Series Incubators

Choice of PID temperature control systems

Temperature range 30 to 80°C*

Digital display of set and actual temperatures (and programmed features on "M" Models)

Communication port options

Class 2 Over-temperature protection

Stainless steel radiused interiors

Anti-bacterial epoxy powder coating

Adjustable vent

Choice of natural convection or fan circulated

Sizes from 60 to 250 litres

The IP Series of incubators offers maximum **flexibility** and unparalleled **performance** for the ever increasing demands of today's laboratory. Traditional quality and modern manufacturing techniques linked with LTE's built-in reliability mean that the IP Series represents excellent value.

Flexibility – The IP Series is available in 4 sizes from 60 to 250 litres. Customers can then choose between fan circulated or natural convection options, plus there is a choice of PID control systems to suit most applications as detailed below:

"U" Models: This uni-program system offers single temperature selection and control at the push of a button. Following a mains power failure, the controller will automatically re-instate.

"M" Models: Our multi-program controller will allow upto 8 multiple-step cycles to be stored in the memory at any one time. It also incorporates a selectable temperature ramping function, which allows controlled temperature rise and fall rates to be programmed into a cycle. At the end of a program sequence, the controller can be programmed to stop or repeat the sequence again. The repeat function can be programmed for a specified number of repeats or it can repeat continuously until interrupted. Following a mains power failure, "M" models have 3 recovery options (cycle hold, start cycle from the beginning or re-start cycle from point of interruption).

RS232 or RS485 communication ports can be added to all "M" models.

All "M" models are fitted with an inner glass door as standard.

Performance – Fast heat-up times, almost undetectable overshoot and superb accuracy (see table below) make the IP Series a class-leading product.

All IP Series incubators incorporate a manual reset over-temperature cut-out, in line with IEC1010-2-010.

TECHNICAL AND ORDERING INFORMATION:

IP Series : 30 to 80°C*

Model and Cat. No		Cap, litres	Air Circulation	Internal Dims, HxWxD, mm	External Dims, HxWxD, mm	Fluctuation ± %	Spatial Variation (empty) ± %*	Shelves/ positions/ mass, kg	Power Rating, Watts
"U" Models	"M" Models								
IP60-U	IP60-M	60	Natural convection	400 x 400 x 400	590 x 735 x 575	Fan Circ 0.25	2.75	2/6/50	300
IP60-UF	IP60-MF		Fan circulation				1.5		200
IP100-U	IP100-M	100	Natural convection	500 x 500 x 400	690 x 835 x 575		2.75	2/8/60	375
IP100-UF	IP100-MF		Fan circulation				1.5		250
IP150-U	IP150-M	150	Natural convection	600 x 500 x 500	790 x 835 x 675		4.0	2/10/80	650
IP150-UF	IP150-MF		Fan circulation			Nat. Conv. 0.5	1.5		350
IP250-U	IP250-M	250	Natural convection	1000 x 500 x 500	1190 x 835 x 675		5.0	3/18/120	1050
IP250-UF	IP250-MF		Fan circulation				2.0		500

* Performance tests carried out in ambient temperatures of 20 to 22°C

OPTIONS AND ACCESSORIES:

Catalogue No.	Description	Catalogue No.	Description
OA001	0-24hr timer ("U" models only)	SC002	12-point test certificate
OA002	Independent printer	SH002	Shelf for 60-litre models
OA003	Inner glass door ("U" models only)	SH003	Shelf for 100-litre models
OA005	Access port, 18mm	SH004	Shelf for 150-litre models
OA006	Stacking kit (except 250 litre size)	SH005	Shelf for 250-litre models
SC001	Calibration certificate		

Need a larger capacity? Call our sales office on **01457 876221** for details of units up to 1000-litres.

IC Series Cooled Incubators

The IC range of cooled incubators from LTE Scientific delivers exceptional performance and value. There are 4 sizes available in the range – 92-litres, 176-litres, 294-litres and 516-litres.

All models use refrigerants R290 or R600a which have a Global Warming Potential (GWP) of just 3. This combined with low energy consumption will help keep running costs to a minimum whilst reducing your carbon footprint.

Accurate temperature performance and space-efficient storage capacities are key features of the new IC range. All IC Cooled Incubators incorporate a quiet but effective fan circulation system which distributes the air evenly throughout the chamber. All models are designed to operate between +2°C and +50°C.

There is a choice of either white epoxy coated or stainless steel exterior finish. In addition all models can also be supplied with double-glazed glass doors. Interior finish is of a high impact-resistant and durable ABS. The entire range also has a one piece door seal which can be easily removed making the whole cabinet extremely easy to clean and maintain.

The IC200 model is an under-bench or bench-top model providing an impressive net chamber capacity of 92-litres, which makes it one of the largest under-bench/bench-top cooled incubators available. In addition, the IC200 and 300 models can be stacked (either IC200/IC200 or IC300/IC200) providing further flexibility of laboratory space.

Shelves are plastic coated and sit in tip-proof 'U' shaped runners.

For easy manoeuvrability, all models except the IC200 are supplied on swivel castors as standard. The IC200 is fitted with flat skids.

IC Cooled Incubators are controlled via an electronic PID controller providing close control and variation throughout the chambers. Over-temperature protection is provided via a class 2 limiter.

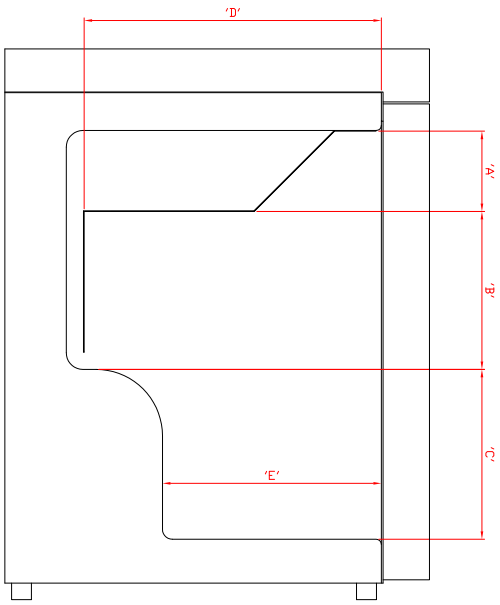
TECHNICAL AND ORDERING INFORMATION:

Model Range	Net Capacity, litres	Exterior Finish & Door Type	Cat. No	Internal Dims, HWD, mm	External Dims, HWD, mm	Variation*	Weight	Shelves
IC200	92	White epoxy, solid door	IC/200/WS	Height A 90 B 260 C 260 Width 460 Depth D 448 E 330	830 x 595 x 640 (add 95mm for castors if fitted)	At +5°C: ±0.35°C At 37°C: ±0.8°C	50kg (add 6kg for glass door)	3
		Stainless steel, solid door	IC/200/SS					
		White epoxy, glass door	IC/200/WG					
		Stainless steel, glass door	IC/200/SG					
IC300	176	White epoxy, solid door	IC/300/WS	Height A 90 B 665 C 260 Width 460 Depth D 448 E 330	1325 x 595 x 640	At 5°C: ±0.6°C At 37°C: ±1.0°C	65kg (add 8kg for glass door)	4
		Stainless steel, solid door	IC/300/SS					
		White epoxy, glass door	IC/300/WG					
		Stainless steel, glass door	IC/300/SG					
IC400	294	White epoxy, solid door	IC/400/WS	Height A 90 B 1240 C 260 Width 460 Depth D 448 E 330	1900 x 595 x 640	At 5°C: ±0.6°C At 37°C: ±1.0°C	80kg (add 9kg for glass door)	6
		Stainless steel, solid door	IC/400/SS					
		White epoxy, glass door	IC/400/WG					
		Stainless steel, glass door	IC/400/SG					
IC600	516	White epoxy, solid door	IC/600/WS	1470 x 575 x 660 (less 110mm on height for internal fan box)	2000 x 695 x 868	At 5°C: ±0.6°C At 37°C: ±0.6°C	120kg (add 12kg for glass door)	4
		Stainless steel, solid door	IC/600/SS					
		White epoxy, glass door	IC/600/WG					
		Stainless steel, glass door	IC/600/SG					

*Tests carried out in empty chambers on cabinets with solid doors using 12 x temperature probes in free space.

OPTIONS:

Catalogue No.	Description
IC/LIT/01	Interior illumination with 24hr/7 day timer
IC/HLT/01	Hi/Low temperature limiter with alarm
IC/ACC/01	Access port, 18mm dia, side panels only.
IC/SCK/01	Internal splash-proof electrical 13A socket
IC/STK/01	Stacking kit for IC200/300
IC/STK/02	Stacking kit with base unit castors for IC200
IC/SHF/01	Full-size shelf for IC200
IC/SHF/02	Full-size shelf for IC300
IC/SHF/03	Full-size shelf for IC400
IC/SHF/04	Full-size shelf for IC600



Lyotrap Laboratory Freeze-Dryers

Our latest generation of Lyotrap freeze-dryers are ideal for laboratory, light process and pilot-scale applications. All models except the Mini-Lyotrap come with touchscreen control and display, and all models have mobile temperature probes for product sampling as standard, ensuring that the LTE Lyotrap range continues to provide a cost-effective and reliable freeze-drying solution.

Range Features

Choice of 3 models from 3 to 10kg ice capacity

Large range of accessories and consumables

Touchscreen control and TFT display (exc Mini-Lyotrap)

Mobile temperature probe included for product sampling

Corrosion resistant refrigeration systems

CFC-Free Refrigerant

Simple installation

Stainless steel chamber

-55°C and -85°C models

Flexible applications

Mini-Lyotrap

LTE's smallest bench-top freeze-dryer has a digital temperature display and an impressive ice capacity of 3kg (2kg in 24hrs). Taking up minimal bench space, the Mini-Lyotrap is ideal for all common freeze-drying applications and can also be used as a cold trap for single or multiple units. Min Temp -55°C.

Lyotrap

This simple to use, touchscreen-controlled bench-top model is packed with useful features. The Lyotrap has an ice capacity of 5kg (3kg in 24hrs) and incorporates an electric defrost facility. All cycles are logged and can be downloaded via USB. Real-time graphical display of temperature and vacuum is included as standard. This model offers two minimum temperature options: -55°C and -85°C.

Lyotrap-Ultra

LTE's largest freeze-dryer has a 10kg ice capacity (6kg in 24hrs) and is designed to take up minimal floor space. With the same controls and features as the Lyotrap, the Lyotrap-Ultra is ideal for high product volumes and long running times before defrost. It is well suited for multi-user laboratories and pilot-scale applications. Min Temp -55°C.

FREEZE-DRYING USING:

FLASKS. The sample in the flask would be pre-frozen before being freeze-dried. A popular method of freezing liquid samples is to rotate the flask in a pre-freezing bath. This has the benefit of providing a thin film of frozen material around the inside of the flask which improves the efficiency and overall speed of the freeze-drying process.

Flasks are usually placed onto a suitable manifold for freeze-drying, many of which are available. Column manifolds are ideal if you are freeze-drying flasks and jars only. Drum manifolds or the acrylic chamber fitted with a manifold lid will allow more flexibility in the type of product to be freeze-dried.

TRAYS OR SHELVES. Again, product would be pre-frozen before freeze-drying. Using our shelf arrangement, samples would be placed onto the shelves directly. For drying using the tray and support option, samples would be pre-frozen in the trays provided and slotted onto the rack. Up to 6 trays could be freeze-dried at any one time. Temperature-controlled heater mats can be supplied for this application.

VIALS. Freeze-drying in vials requires the use of our manual stoppering shelf arrangement, connected to the required base unit. This stoppering system will allow large quantites of vials to be dried at once. It is supplied complete with suitable trays and an acrylic vacuum chamber. Optional temperature-controlled heater mats will allow improved drying rates.

AMPOULES. The ampoules need to be frozen before being fitted to the manifold. Ampoules can be frozen in 2 ways. They can be placed into a conventional freezer. Whilst this is a common method, freezing in this way can prolong the freeze-drying process due to the concentration of the sample. A much better way is to use a Spin Freezer. Following pre-freezing the ampoules would be freeze-dried using either a single or double manifold arrangement, each manifold capable of holding 48 ampoules. Following freeze-drying it is then normal to seal the ampoules using a fine flame technique.

THE BASE UNIT:

Model/cat no	Ice capacity	Heat extraction rate (-40°C)	Min. Temp.°C	Condenser chamber dims, dia x depth, mm	Overall dims, HxWxD, mm
Mini-Lyotrap FIT/LYO/46/1	3kg (2kg in 24hrs)	80W	-55	200 x 250	400 x 525 x 515
Lyotrap FIT/LYO/49/1	5kg (3kg in 24hrs)	170W	-55	200 x 350	500 x 580 x 630
Lyotrap -85 FIT/LYO/52/1	5kg (3kg in 24hrs)	170W	-85	200 x 350	500 x 900 x 630
Lyotrap-Ultra FIT/LYO/56/1	10kg (6kg in 24hrs)	350W	-55	270 x 500	930 x 460 x 630

THE ACCESSORIES :

Catalogue No.	Description	Catalogue No.	Description
FIT/LYO/01/0	Acrylic drying chamber, 300mm dia x 400mm high.	FIT/LYO/19/0	Temperature-controlled heater mat arrangement (6 mats).
FIT/LYO/03/0	Aluminium 6-shelf unit 270mm dia. For acrylic chamber. Excludes trays.	FIT/LYO/22/0	Stoppering shelf arrangement, excluding acrylic chamber.
FIT/LYO/06/0	8-port flask manifold lid, excluding quickseal valves.	FIT/LYO/25/0	Lid with 48-port ampoule manifold.
FIT/LYO/09/0	Cold trap lid with hose for solvent recovery or vacuum pump protection.	FIT/LYO/26/0	Lid with 96-port ampoule manifold.
FIT/LYO/12/0	Drying chamber plain lid, 310mm dia x 20mm thick.	FIT/LYO/28/0	Spin Freezer, including 1 set of carrier plates.
FIT/LYO/13/0	8-port column manifold with lid attachment, excluding quickseal valves.	FIT/LYO/31/0	Additional spin freezer carrier plates.
FIT/LYO/16/0	16-port column manifold with lid attachment, excluding quickseal valves.	FIT/LYO/50/0	1m vacuum hose and clamp to fit Lyotrap, plus KF25 hose for vacuum pump.
FIT/LYO/43/0	Quickseal valve.	FIT/LYO/40/0	2-off "L" section rubber gaskets for drying chamber.
FIT/LYO/34/0	Trays for closing device or shelf unit, 230mm dia.	FP/PMP/05/0	GVPDK 10 vacuum pump + oil mist filter.

Mini-Lyotrap

Lyotrap, Acrylic Drying Chamber & 8-Port Manifold Lid

Lyotrap-Ultra

Ask about LTE Scientific's other products & services

- Autoclaves
- Environmental Rooms & Chambers
- Service
- Training

If you require more information on the products in this brochure, or would like details on any other product in our range, please visit our website or contact our sales office on **01457 876221**.

LTE Service Centre provides after-sale care on a wide range of autoclaves and laboratory equipment.

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