Thermo Scientific Heraeus® Cytoperm® 2 CO_2 and CO_2/O_2 Incubator

Contamination protection that's in a class of its own

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Thermo Scientific Heraeus Cytoperm® 2

Our Cytoperm 2 CO_2 incubator offers simple handling, safe operation and high protection against contamination.

Our Cytoperm 2 meets stringent requirements, essential for demanding research in pharmaceutical, cancer, AIDS, vaccine production and IVF fields and other applications involving sensitive or infectious samples.

The high performance Cytoperm 2 controls temperature, CO_2 content and even relative humidity levels with exceptional precision to simulate the natural environment of cells. Models with oxygen (O_2) control area also available for those seeking to establish hypoxic or hyperoxic culture conditions.

Cytoperm 2 represents the synergies of safety and reliability for cell and tissue culture applications

- convenient hot air disinfection at 180°C without the need for removing fittings or sensors
- humidity water safely located outside the culture chamber
- unique pyrolytic germ barrier sterilizes external humidity water prior to introduction into the culture chamber
- full humidity control and display
- reliable air jacketed heating system

Protection for High Demands

Contamination prevention
Contamination by bacteria, viruses, fungal spores and mycoplasmas can destroy valuable cultures or distort test results, causing more work. The Cytoperm 2 CO_2 incubators advanced design incorporates measures which avoid or efficiently eliminate contamination.

180°C hot air disinfection
An on-demand heating system operating independently of the incubation system raises the temperature of the work space to 180°C for disinfection. The automatic routine is initiated by a simple key switch and can be repeated as often as required. All fittings and sensors remain inside the incubator during disinfection. A GLP tested laboratory, accredited in accordance with DIN EN 45001, confirms the 180°C hot air disinfection routine's efficacy.

Test germs to verify the efficacy:
- *Bacillus subtilis*
- *Bacillus stearothermophilus (USP 23)*
- *Enterococcus faecalis*
- *Escherichia coli*
- *Pseudomonas aeruginosa*
- *Aspergillus niger*

Pyrolytic germ barrier
Humidifying vapor is produced by passing water over a 500°C pyrolytic barrier, ensuring that it is completely sterile on entering the chamber. This system reliably prevents spread of contamination.

External water reservoir
The water reservoir of the Cytoperm 2 is located outside the incubation chamber, thus there are no open water surface areas inside the incubator. Combined with the pyrolytic germ barrier, contamination is effectively counter-acted.

Gas-tight screen
Six individually sealed glass doors which allow segmented access to individual sections of the incubator are provided as standard. This minimizes any changes to the atmosphere during opening, shortens recovery times significantly and also further reduces the risk of contamination.

Air jacket heating system
The air jacket heating system maintains constant and stable temperatures on all interior surfaces.

Disinfection routine with temperature and status display

Easy to clean interior

Operating panel with additional O_2-control.

Ideal Culture Conditions

Reliable sensors with automatic calibration ensure the long-term stability of incubation parameters.

Constant environmental parameters
The cell's environmental conditions change, for example, when the gassed incubator is opened. Permanent control and regulation of the parameters ensure that such changes are detected and the required *in vitro* conditions are re-established in the shortest possible time. This feature ensures the high degree of stability in environmental conditions required for both long- and short-term cultures.

Temperature control
Temperature is microprocessor-controlled with a Pt 100 sensor.

Humidity control
The relative humidity (RH) is controlled with a microprocessor. The maintenance-free sensor operates in accordance with the capacitive humidity measuring principle. The water reservoir for humidification is located outside the work space and is easy to fill, empty and monitor.

CO_2 control using auto-zero
CO_2 levels are microprocessor-controlled using a thermal conductivity sensor with excellent long-term stability and reliability with built-in humidity compensation. A fully automated calibration (auto-zero) is carried out periodically to ensure CO_2 long-term stability and thus stable CO_2 levels and a constant pH level in culture media with bicarbonate buffers.

High Safety Standards

Our Cytoperm 2 offers a number of safety features:

Auto-start function
The auto-start function, which considerably simplifies the equipment's operation, contains the incubator's automatic start-up and the measuring system's calibration. The incubator can be loaded immediately after the start-up routine is completed.

Locking of set values
By locking the set values, unauthorized alterations of the incubation conditions are prevented. Switching the Cytoperm 2 on and off, and activating the disinfection routine is done via a key switch.

Over-temperature protection
A second, totally independent control system with an additional Pt 100 temperature sensor protects samples from over-temperature.

Alarm and error diagnosis
Alarm functions are provided for all control parameters, giving acoustic or visual signals when errors occur. The error diagnosis system identifies malfunctions, which can be queried using the "i" (information) key on the operating panel.

Lockable door
Unauthorized access to samples can be prevented through the lockable door. This feature is particularly important when dealing with hazardous samples or during long-term experiments.

Safety during power failure
All operating parameters remain stored in the event of a power failure. When power is restored, the unit automatically returns to standard operation and immediately reinstates the set parameters.

The clear operating panel ensures simple handling

Lockable heated door and water level indicator for the water reservoir

Need Validation?
Validation documentation and services are available from Thermo Fisher Scientific in many areas. Contact your local representative for details.

TECHNICAL SPECIFICATIONS

Thermo Scientific Heraeus Cytoperm 2 CO_2 and CO_2/O_2 Incubators

Type		Unit	Value/Description	Unit	Value/Description
Dimensions					
External casing	(w/h/d)	mm	920 x 855 x 775	inch	36.22 x 33.66 x 30.51
Work space	(w/h/d)	mm	607 x 669 x 585	inch	23.09 x 26.34 x 23.03
Total volume		l	220	cu.ft.	7.77
Shelves, two pieces					
Dimensions	(w/d)	mm	260 x 500	inch	10.24 x 19.69
No. standard/maximum			6/16		
Max. load per shelf/total load per unit		kg	5/30	lbs.	11.02/66.14
Access port					
Access port		ø 20 mm	rear wall bottom left	0.79 inch	
Material					
Work space and fittings			stainless steel		
Start-up			using auto-start routine		
Start-up time at 37°C set temp.		h	ca. 4.5		
Disinfection routine			verified by an accredited laboratory		
Disinfection temperature on all surface areas		°C/h	180/3		
Disinfection routine		h	~12		
Efficiency spectrum			bacteria, fungi, spores (USP 23)		
Temperature			thermo jacket heating system		
Measurement and control range	CO_2 unit	°C	T_A[1] + 5 … 50		
	CO_2/O_2 unit	°C	T_A[1] + 7 … 50		
spatial[2]/temporal[2][3]					
Temperature deviations		K	≤± 0.1/≤± 0.5		
Heating up time to 37°C with auto-start[4]		h	approx. 5		
Ambient temperature range		°C	18 … 30		
Recovery time[5]		min	≤ 3		
Humidity			external water reservoir		
Controlled, measuring principle		RH	capacitive humidity measurement		
Control range		% RH	60 … 95		
Control accuracy		% RH	± 1		
Recovery time at 95% rH[2]		min	≤ 9		
CO_2			TCD		
Controlled, measuring principle			thermal conductivity measuring cell with auto-start and auto-zero functions, 180°C hot air disinfection		
Measurement and control range		vol %	0 … 20		
Control accuracy		vol %	0.1		
Recovery time at 5% CO_2[2]		min	≤ 2		
O_2 control (option)					
Controlled, measuring principle			zirconium oxide sensor with auto-cal function		
Control range		% O_2	3 … 90		
Supply of O_2 for the range		% O_2	> 21 … 90		
Supply of N_2 for the range		% O_2	3 … < 21		
Control accuracy		% O_2	± 0.5		
Recovery time at 7% O_2[2]		min	≤ 15		
Electrical data					
Rated voltage		V~	230		
Rated power	incubation operation at 37°C	kW	1.2		
	disinfection operation at 180°C	kW	1.2		
Rated frequency		Hz	50/60		
Weight (excluding accessories)		kg	107	lbs.	235.89

[1] T_A = ambient temperature
[2] DIN 12880, part 2/11.78
[3] at 37°C
[4] T_A = 22°C, incubator empty
[5] at 37°C, after 30 sec open door, to 98% of the initial value

ORDERING INFORMATION

Thermo Scientific Heraeus Cytoperm 2 CO_2 and CO_2/O_2 Incubators

Ordering Information	
Cytoperm 2, CO_2, 230V/50Hz	**51011659**
Cytoperm 2, CO_2/O_2, 230V/50Hz	**51011660**

Accessories	
Support frame, height 300 mm	50031348
Support frame, height 780 mm	50029597
Rack to stack two Cytoperm 2	50053628
Additional stainless steel shelf, half width including 2 shelf supports	50029943
Gas cylinder monitor with acoustic signal, 120/230 V~, 50/60 Hz	50046033
CO_2 cylinder pressure regulator	03429937
N_2 cylinder pressure regulator	03429942
O_2 cylinder pressure regulator	03429943

All units are UL listed to United States and Canadian requirements and bear the CE Mark.

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Asia: China +86 21 6865 4588 or +86 10 5850 3588, India +91 22 5542 9494, Japan +81 45 453 9220, Other Asian countries +852 2885 4613
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www.thermo.com/incubators

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