Guide to Thermo Scientific Laboratory Refrigerators and Freezers

Researchers worldwide protect more than two billion samples inside Thermo Scientific cold storage equipment

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Selecting the right cold storage equipment has become a critical decision for today's laboratory.

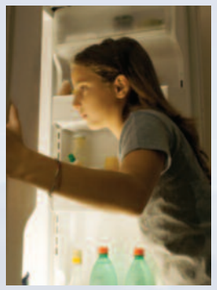
Refrigeration problems have been cited as a major cause for the €15 million wasted each year from ruined vaccines in the U.S. Federal Vaccines for Children Program.[1] Laboratories today are recognizing the key differences between standard refrigerators and freezers and those designed specifically for protecting precious samples.

Three types of refrigerators and freezers for three specific needs

Those built for the laboratory application

These refrigerators and freezers are designed to store high value, critical samples, reagents, enzymes and cells. They're specifically engineered to meet the demanding temperature requirements of these valuable items. Sample integrity and protection is paramount.

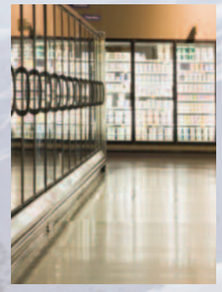
✓ **high value**
✓ **critical storage**



Those built for home and domestic use

These products are designed for household groceries such as eggs, meat and cheese. If the units' temperature fluctuates outside the required limits, these items will be inexpensive to replace.

✓ **low value**
✓ **non-critical storage**



Those built for the retail and catering sector

These products are designed for commercial groceries such as bottled water, and bulk storage food. If the units' temperature fluctuates outside the required limits, these items will be inexpensive to replace.

✓ **low value**
✓ **non-critical storage**

REFERENCES
1. Welte, Melanie. 2007. *Vaccines ruined by poor refrigeration.* USA Today. http://www.usatoday.com/ news/health/2007-12-04-spoiled-vaccines_N.htm (accessed April, 2008).

Key differences between laboratory refrigerators and freezers and those for domestic, retail and catering storage

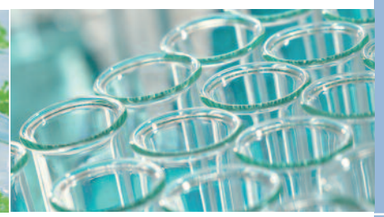
Specification	Home Units	Food And Beverage Units	Thermo Scientific Laboratory Units	Benefit
Operation				
Temp. Uniformity Range of ± 3ºC or Less	–	–	✓	Storage items throughout the unit are held at the same temperature
Temp. Stability Range of 1ºC or Less	–	–	✓	Storage items stay at temperature while you open and close the unit
Construction				
Robust Frame	–	✓	✓	Can handle hundreds of thousands of door openings and closings
Powerful Refrigeration System	–	✓	✓	Ensures proper temperature uniformity and stability
High-Quality Door Seals	–	✓	✓	Ensures proper temperature uniformity and stability
Heavy-Duty Castors	–	✓	✓	Safely and easily move units
Key Lock Doors	–	✓	✓	Control who has access to critical samples
Directional Airflow	–	–	✓	Ensures proper temperature uniformity and stability
Multi-Pane Glass Windows	–	–	✓	Better insulation and identification for sample protection and exposure
Self-Closing Doors	–	–	✓	Prevents accidental open doors that threaten samples
Access Ports	–	–	✓	Insert additional probes to temperature map the cabinet and cells
Flammable Material Storage	–	–	✓	Safe, cold storage protection for flammable sample material
Spark-Free Interior Cabinets	–	–	✓	Giving you reduced risk when storing flammable products
Controls				
Microprocessor-Controlled Setpoint	–	–	✓	Higher resolution setpoint
Alarms*	–	–	✓	Alerts you if your samples are at risk
Key-Operated Alarm & Setpoint Security	–	–	✓	Lock in temperature and alarm setpoint to minimize error, tampering
Time & Temp. Sensitive Auto-Defrost	–	–	✓	Ensures proper temperature uniformity for sample protection
Temperature Recording	–	–	✓	Hard-copy record of temperature data
Temperature Monitoring	–	–	✓	Confidence that samples are seeing correct temperature fluctuations
Electrical Output Signals	–	–	✓	Monitor any electrical function
Support				
Comprehensive Lab. Warranty & Service	–	–	✓	Peace-of-mind that the manufacturer stands behind their product
Technical & Applications Support	–	–	✓	Peace-of-mind that expert advice is there when needed
Service Contracts	–	–	✓	Keeps units in top condition with regular service
Validation Services	–	–	✓	Ensure regulatory compliance with factory-certified technicians

** door ajar, power loss, over-temperature, under-temperature, low battery, service required*

Items requiring a refrigerator or freezer engineered for laboratory storage

Antibodies
APIs
Bacteria/Viruses
Biologicals
Blood Products
BOD Protocols
Cell Culture Media
Chromatography Apparatus
Chromatography Instrumentation
Clinical Samples
Control Materials
Cytokines
Derived Cells
Enzymes
Laboratory Reagents
Microbiology Cultures
Patient Medication
Patient Specimens
Plasma/Serum
Proteins
Reagent Test Kits
Solvents
Tissue Blocks/Slides
Tissue Cultures
Vaccines

Thermo Scientific Laboratory Refrigerators and Freezers
Leading the world in sample protection



Thermo Scientific laboratory refrigerators and freezers are specifically designed to safeguard precious samples. A complete portfolio of products is available to suit your stringent application needs including:

- High-performance laboratory refrigerators and freezers
- Chromatography refrigerators
- Pharmacy and biological refrigerators
- Plasma freezers
- Enzyme freezers
- Blood bank refrigerators
- General purpose laboratory refrigerators and freezers
- Spark-free refrigerators and freezers

Auto defrost cycling

Remember, for critical items, having time AND temperature-sensitive auto defrost cycling is important to keep temperature fluctuations within a tight range. Ice cream is a good example that illustrates this. A household freezer causes ice cream to melt and refreeze because it only has time-sensitive auto defrost cycling. The freezer can't sense that the ice cream is outside of its required temperature storage range and lets it melt…don't let this happen to your samples!

Energy Star and laboratory refrigeration

Currently the EPA/DOE has NOT issued ENERGY STAR rating guidelines for laboratory refrigerators and freezers. Thus, no laboratory refrigerator and freezers on the market today are ENERGY STAR compliant. However, Thermo Scientific products are leading the way in energy saving cold storage solutions – without compromising sample protection.

For more information, contact your sales representative:

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