

EBOOK

ULT PRESERVATION







6 points to consider

when purchasing a [ULT Freezer](#)

6 POINTS TO CONSIDER WHEN PURCHASING A ULT FREEZER

There are many things to consider when purchasing an ULT freezer. Keeping in mind that the ultimate goal is to maintain sample viability for the longest amount of time possible.

These are the **6 main points** to consider:

-  Reliability
-  Usage
-  Uniformity
-  Placement
-  Energy – Efficiency
-  Back-up Plan

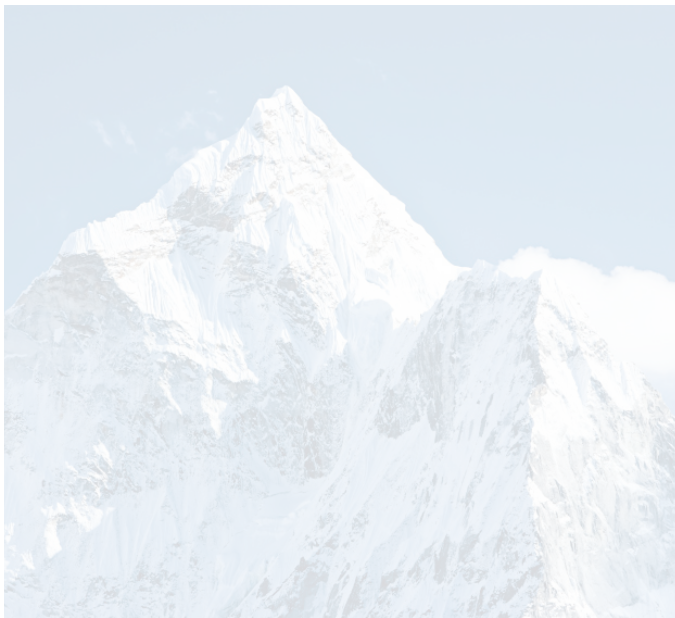


POINT 1. RELIABILITY



Does the manufacturer have a proven track record of reliability?

Do your research and find out about the reliability rate of each manufacturer's freezers. How long have they been in the field and have there been many cases of out-of-the-box freezer failure or general failure? Everyone is prone to freezer failure and it occurs more often than you think. Don't allow yourself to be a test subject for new technology.



WHEN	WHERE	WHAT	WHY	REFERENCES
JUNE 2012	Utah State University	The work of 8 scientists over a 9 year span was jeopardized	The freezer was moved to a different room where it was left unplugged overnight	(2)
MAY 2012	McLean Hospital Harvard University	93 human brains were destroyed, leading to a loss of a decade's worth of autism research	The freezer shut down overnight without triggering alarms	(3)
JUNE 2010	Louisiana State University	The entomology department lost a priceless collection of reptilian tissues	Power failure	(4)
JUNE 2009	University of Toronto	Samples valued at more than 50,000 were damaged	Water pipe failure	(5)

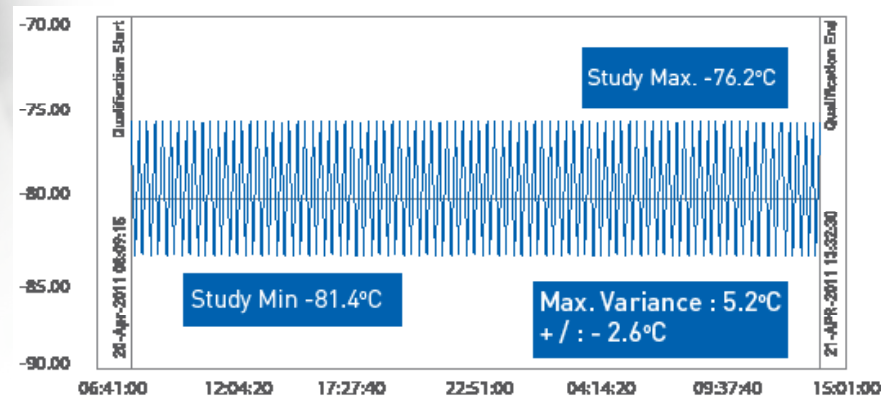
(2) Jensen, M. (2012) Years of research lost: Fingers pointed but fault unclear after bungled USU freezer move. HJnews.com; Available at http://news.hjnews.com/news/article_5ffbc72c-bdab-11e1-8341-0014bcf887a.html (3) CBS News (2012) Freezer malfunction thaws 150 brains at Harvard research hospital. Available at http://www.cbsnews.com/8301-504763_162-57450310-10391704/freezer-malfunction-thaws-150-brains-at-harvard-research-hospital/ (4) LSU Newsletter (2008) Department of Entomology News. Available at <http://www.lsuagcenter.com/NR/rdonlyres/E5E661B8-5268-42C1-AA34-9ECBCE13A9EA/59509/Entomologynewsfall08.pdf> (5) University of Toronto (2007) Risk Management and Insurance Report. Available at <http://www.governingcouncil.utoronto.ca/AssetFactory.aspx?did=5348> (6) Goover, K., Drew, K., & Franke, J. (2007) The Use of Compressor Cycle Patterns: The Ability to Predict Freezer Failure. Cell Preservation Technology (5) 225-228

POINT 2. USAGE

How many times do you plan on opening your ULT freezer door?

If it's more than a few, it may be worthwhile to look at temperature recovery following a door opening. Even if the display reads that the freezer is at a certain set temperature after you close the door, that doesn't necessarily mean it is at that point. Prolonged periods of temperature elevation due to lengthy recovery periods can affect your samples' viability. Ask for temperature mapping data from a reliable source. Manufacturers will often place internal chamber temperature probes in the coldest spot in the freezer, so don't rely on display temperature alone.

VIP Temperature Mapping Data



Surpasses the customer preference of $\pm 5^{\circ}\text{C}^*$

+5°C

Uniformity

-5°C

Panasonic

POINT 3. UNIFORMITY

How do you know if the freezer maintains uniform temperature throughout the chamber?

Ask for reliable uniformity data. Uniformity mapping has become a common practice in the pharmaceutical industry in the last decade, so this data should be readily available. Surprisingly, it is quite common for upright ULT freezers to have temperature variances of up to 30 degrees between the top and bottom. Samples should be stored at uniform ULT temperatures to maintain viability. Again, don't rely on the temperature display for the reason noted above.

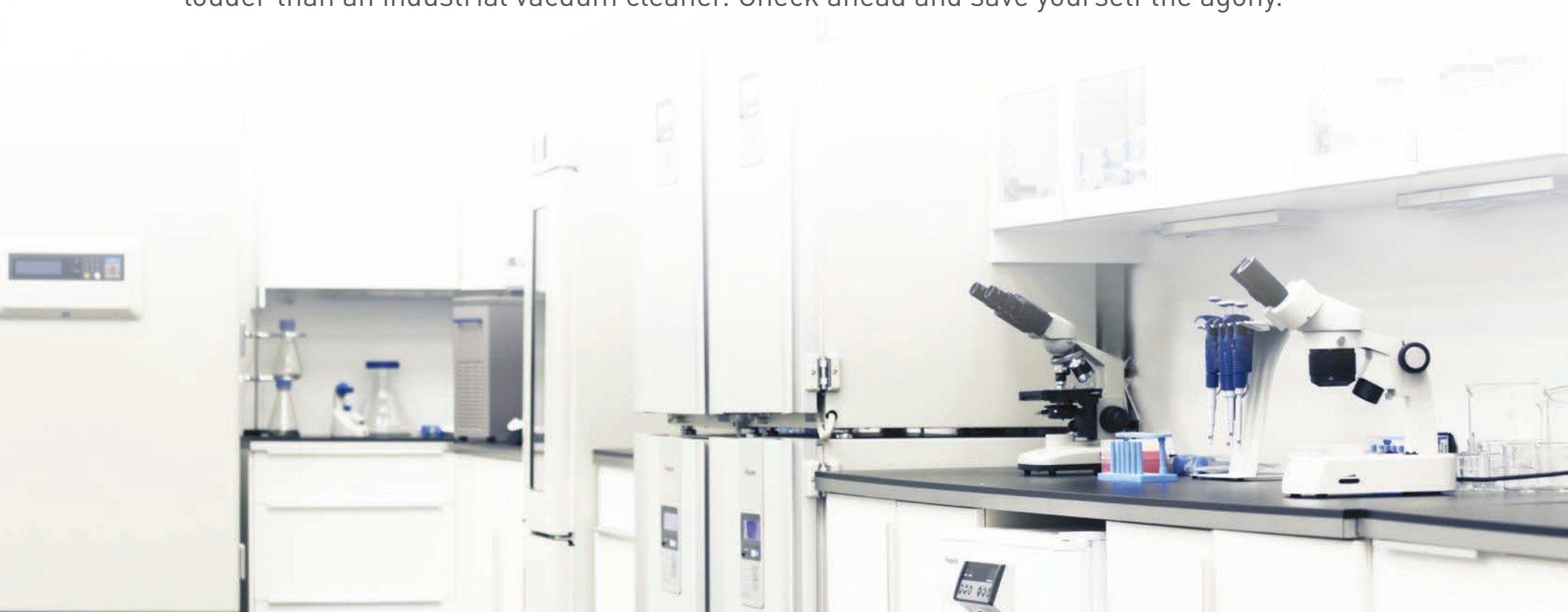


POINT 4. PLACEMENT



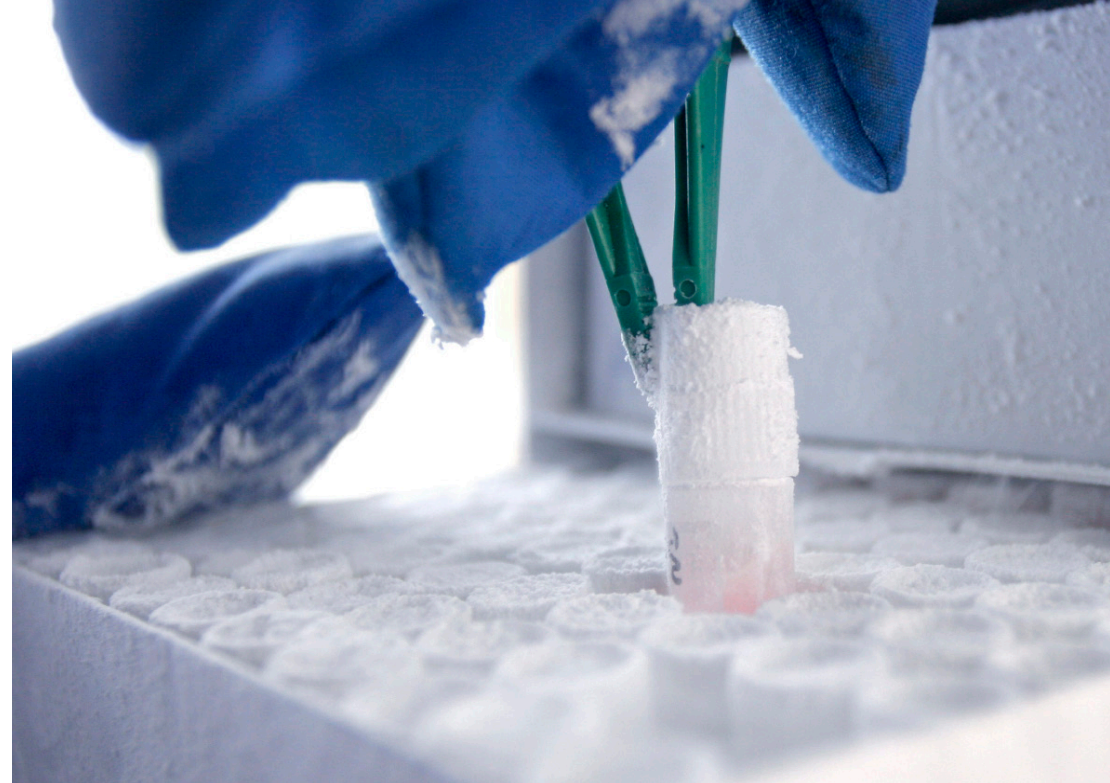
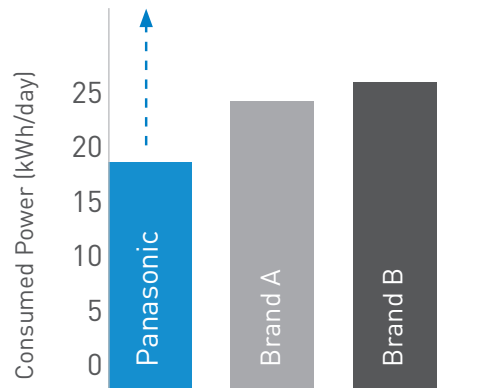
Where is the freezer going to be placed?

Some freezers have their moving (or loudest components) placed on top. This will make the freezer appear louder as the components are closer to your ear. Noise levels are measured in dB. Ask for the noise rating of the freezer you are considering and information on how a unit is tested, or better yet check for yourself on freezers in your area. Don't rely simply on the manufacturer's rating. Noise is subjective and sometimes just the pitch of some freezers can be disagreeable to some people. Further, many current ULT freezer designs are louder than an industrial vacuum cleaner. Check ahead and save yourself the agony.



VIP Series Energy Savings

Up to **31%** more efficient



POINT 5. ENERGY EFFICIENCY



How important is energy efficiency?

Many large facilities often try to find the most energy efficient ULT freezer to reduce utility costs. However, this may not always be the best route for your lab. Considering energy consumption alone may lead to frustrations down the road if the freezer's refrigeration system is underpowered for your application. This will really come down to how often you plan on accessing the freezer and the sensitivity of your samples.

POINT 6. BACK-UP PLAN



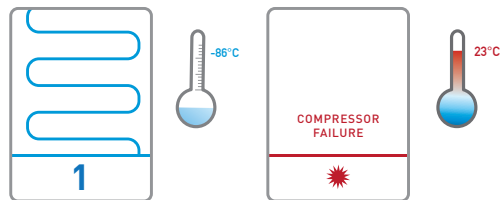
If a freezer does fail, how does it effect your work? What back-up plans do you have in place?

To protect critical samples, it may be worthwhile considering a product like the Panasonic Twin Guard with dual refrigeration systems. Further temporary protection can be realized in the event of a power failure with a CO₂ back-up system and the LabAlert™ independent wireless monitoring system which can give indications of product irregularities via your smart phone or Internet. With multiple layers of protection, your samples are safe from catastrophic failure. Without Twin Guard technology, researchers tend to rely on purchasing extra empty back-up freezers or liquid nitrogen systems in the event one goes down.

Traditional Freezer



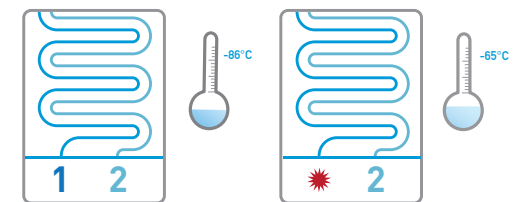
Freezer relies on a single compressor system, causing a complete shut-down when failure occurs. Temperature quickly rises to room temperature.



Panasonic Twin Guard® Freezer



Second independent compressor system kicks in to maintain ultra-low temperatures in the event of a failure. **Temperature remains at -65°C.**



IN CONCLUSION

You put a lot of trust in your ultra low freezer by storing your highly valuable samples and specimens for long term. It is therefore, befitting that you understand all the aspects of the technology, and ask the right questions to provide the secure ultra low environment before you store your samples. Here is the summarized version of the questions to ask:

- Reliability – Make sure that the manufacturer has a proven track of reliability.
- Temperature Recovery – Ask for the recovery data to see the performance of the freezer after each door opening.
- Uniformity – Ask for uniformity data to see samples at all levels are under the same temperature conditions.
- Placement – Ask for the noise rating of the freezer and then determine the placement within your lab.
- Energy Efficiency – Ask for the energy usage data and determine if it fits within your utility budget.
- Fail Safe Mechanism – Check for the back up plan in case the freezer fails

These six questions will give you the right understanding of the freezer that you are considering and how it fits into your requirements and needs. By doing a little bit of research early into your choices for ultra-low storage, you will be able to maintain viability of your samples without the worry of losing your critical work.

Choose wisely.

