

# Smart Notes

# Q A

## I've heard that switching to $-70^{\circ}\text{C}$ for ultra-low freezers can reduce energy, but is that safe for my sample?

There are several benefits in switching from  $-80^{\circ}\text{C}$  to  $-70^{\circ}\text{C}$ . The first of which is a reduction in energy usage. As more and more labs are required to meet sustainability objectives, energy reduction is a key metric for improvement. Running at  $-70^{\circ}\text{C}$  can reduce energy consumption by up to 30% and, in doing so, can prolong the life of your Ultra-Low Temperature Freezer (ULT).\*

In regards to safety, nucleic acids can be safely stored at  $-20^{\circ}\text{C}$  or  $-70^{\circ}\text{C}$ , depending on the duration of storage. Most proteins can be stored safely at  $-70^{\circ}\text{C}$ . The same is true for bacteria and viruses. In fact, just 15 years ago, all ULT freezers were set to  $-65^{\circ}\text{C}$  or  $-70^{\circ}\text{C}$ .\*

Today, labs found in leading academic institutions as well as the Centers for Disease Control (CDC) are running ultra-low freezers at  $-70^{\circ}\text{C}$  to store samples ranging from DNA/RNA, to bacteria, purified proteins, enzymes and more.\*

\*<http://www.mygreenlab.org/-70-is-the-new--80.html>. Accessed May, 2016.



## Save more energy with a TSX Series ultra-low freezer at -70°C

Thermo Scientific™ TSX Series ultra-low temperature freezers are designed to provide sample protection, energy savings and environmentally-friendly features and benefits.

### Save more energy at a -70°C setpoint

While conventional-refrigerant ultra-low freezers can run up to 18 kWh/day in energy usage, TSX Series freezers offer savings of up to 50%. And, by switching from a -80°C to -70°C setpoint, you can save an additional 22-26% in energy\*:

- TSX70086D at -80°C = 9.5 kWh/day; at -70°C = 7.0 kWh/day. **An additional savings of 26%**
- TSX60086D at -80°C = 8.7 kWh/day; at -70°C = 6.7 kWh/day. **An additional savings of 23%**
- TSX50086D at -80°C = 8.3 kWh/day; at -70°C = 6.5 kWh/day. **An additional savings of 22%**
- TSX40086D at -80°C = 7.9 kWh/day; at -70°C = 6.2 kWh/day. **An additional savings of 22%**

### Environmentally-friendly design features

- Variable-speed compressor (V-drive) technology is designed to continually adapt to a lab's environment, offering significant energy savings without compromising sample protection
- Natural, hydrocarbon refrigerants provide a lower environmental impact and provide higher cooling efficiency
- Water-blown foam insulation eliminates the refrigerant out-gassing, common in other foam products
- All TSX Series ULT freezers are manufactured in an award-winning, zero waste to landfill facility (93% recycling, 7% waste to energy)\*



**Conclusion: Running a TSX Series freezer at -70°C reduces energy usage and maintains sample integrity\*\***

\* Based on internal performance data at -70°C setpoint. Data on file. July 2017..

\*\* Industry Week 2013 Best Plant Award. <http://www.industryweek.com/quality/2013-iw-bestplants-winner-thermo-fisher-scientific-growing-quality-culture-lab>

\*\*\* <http://www.mygreenlab.org/-70-is-the-new--80.html> . Accessed May, 2016.

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