

# SmartNotes

# 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 the freezer.\*

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 and most proteins can also be stored safely at  $-70^{\circ}\text{C}$ . The same is true for bacteria and viruses and in fact, just 15 years ago, all ultra-low 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 $-70^{\circ}\text{C}$

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 $-70^{\circ}\text{C}$ 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  $-80^{\circ}\text{C}$  to  $-70^{\circ}\text{C}$  setpoint, you can save an additional 10–18% in energy\*:

- TSX600 at  $-80^{\circ}\text{C}$  = 8.7 kWh/day; at  $-70^{\circ}\text{C}$  = 7.8 kWh/day.  
**An additional savings of 10%**
- TSX400 at  $-80^{\circ}\text{C}$  = 7.9 kWh/day; at  $-70^{\circ}\text{C}$  = 6.5 kWh/day.  
**An additional savings of 18%**

### Environmentally-friendly design features

- 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 freezers are manufactured in an award-winning, zero waste to landfill facility (93% recycling, 7% waste to energy)\*\*



\* Based on internal performance data at  $-70^{\circ}\text{C}$  setpoint. Data on file. April, 2016.  
\*\* Industry Week 2013 Best Plant Award. <http://www.industryweek.com/quality/2013-iw-best-plants-winner-thermo-fisher-scientific-growing-quality-culture-lab>  
\*\*\* <http://www.mygreenlab.org/-70-is-the-new--80.html> . Accessed May, 2016.

Conclusion: Running a TSX Series freezer at  $-70^{\circ}\text{C}$  reduces energy usage and maintains sample integrity\*\*\*

Find out more at [thermofisher.com/tsx](http://thermofisher.com/tsx)

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