

TSX Series high-performance freezers

Introduction

We are committed to designing our products with the environment in mind—it's part of how we enable our customers to make the world healthier, cleaner, and safer. This fact sheet provides the rationale behind the environmental claim that Thermo Scientific™ TSX Series high-performance freezers, including large-format models, meet ENERGY STAR™ criteria for lab-grade refrigerators and freezers, and are 25–35% more energy efficient than conventional-refrigerant freezers.



Green benefits

- **Energy efficient**—with ENERGY STAR certification, use 25–35% less energy than comparable models

Product description

The TSX Series high-performance freezers, including large-format models, are powered by our unique V-drive—designed to provide temperature stability and uniformity by continually adapting to your environment, to help protect your samples and provide energy savings. The TSX Series freezers combine cold-wall technology and forced-air cooling that dynamically adjusts to keep temperatures stable when the doors are opened. While conventional units use single-speed compressors that continually cycle on and off, the TSX Series freezers save energy by utilizing a variable-speed control system that is more adaptive to user patterns and helps ensure optimal conditions for the most demanding applications such as vaccine or pharmaceutical storage.

In addition to these energy-saving features, the TSX Series freezers use non-hydrofluorocarbon (HFC) coolants, which helps reduce environmental impact and further increases cooling efficiency. HFCs have been identified by the United States Environmental Protection Agency [1] and European Commission [2] as having significant global

warming potential (GWP). So we are phasing out the use of these coolants in our freezers and refrigerators in favor of more environmentally friendly alternatives that also offer better cooling efficiency. Also, the foam insulation is water-blown, rather than chemical-blown, which helps reduce the chemical emissions and outgassing that are common with other foam products.

Our commitment to environmental responsibility doesn't end there. Our freezers and refrigerators are also manufactured in a zero waste-facility, which means that more than 90% of the waste generated at our manufacturing site is diverted from landfill [3].

As an additional advantage, the quiet operation of the TSX Series high-performance freezers (52 dB for the TSX Series model, Cat. No. TSX5030FA, compared to 62 dB for the Thermo Scientific™ Revco™ model, Cat. No. ULT5030A) allows them to be located conveniently inside a lab rather than relegated to the hallway.

Green feature

Energy efficient

The TSX Series freezers are the first high-performance freezers to be ENERGY STAR marked, meeting established ENERGY STAR certification criteria for lab-grade refrigerators and freezers. The TSX Series large-format freezers use 25% less energy than conventional models (Table 1), and TSX Series high-performance freezers use 35% less energy than conventional models (Table 2). Power consumption was measured over a 24-hour span to determine the energy usage (in kWh/day). Measurements were conducted at ambient temperature, similar to typical laboratory conditions. The “energy use reduction” percentage represents the gain in energy efficiency when switching to the specified TSX Series model from the conventional model shown.

Choosing the TSX Series large-format freezer over the conventional Revco freezer would help reduce energy use by 24.8%, saving 2,245 kWh of energy over the course of a year. These savings represent 1.7 metric tons of CO₂ equivalents, or the greenhouse gas emissions from driving 4,095 miles in an average passenger car [4]. It also translates to an energy cost savings of just over \$235 annually [5], based on commercial-sector electricity rates. In addition to these energy-saving benefits, the TSX Series large-format freezer emits less heat into the room, which may also help lower heating, ventilation, and air conditioning (HVAC) costs. The TSX Series freezer (Cat. No. TSX5030FA) emits 2,147 BTU, compared to 5,333 BTU from the conventional Revco freezer (Cat. No. ULT5030A).

The regular-format TSX Series high-performance freezer demonstrates similar energy savings. Choosing the TSX Series freezer (Cat. No. TSX2330FA) over the Revco



TSX Series large-format freezer (Cat. No. TSX5030FA)



TSX Series high-performance freezer (Cat. No. TSX2330FA)

Table 1. Comparison of energy usage between TSX Series large-format high-performance freezer and conventional large-format freezer operating at –30°C.

Freezer	Energy usage (kWh/day)	Energy use reduction by switching to TSX Series model	Cat. No.
TSX Series	18.65	NA	TSX5030FA*
Revco	24.80	24.8%	ULT5030A**

* energystar.gov/productfinder/product/certified-lab-grade-refrigeration/details/2319634
 ** Data on file.

Table 2. Comparison of energy usage between TSX Series high-performance freezer and conventional freezer operating at –30°C.

Freezer	Energy usage (kWh/day)	Energy use reduction by switching to TSX Series model	Cat. No.
TSX Series	10.65	–	TSX2330FA*
Revco	16.30	34.7%	ULT2330A**

* energystar.gov/productfinder/product/certified-lab-grade-refrigeration/details/2319574
 ** Data on file.

model (Cat. No. ULT2330A) would reduce energy use by 34.7%, saving 2,062 kWh of energy over the course of a year. These savings represent 1.5 metric tons of CO₂ equivalents, or the greenhouse gas emissions from driving 3,761 miles in an average passenger car [4]. It also translates to annual energy cost savings of \$215 [5], based on commercial sector electricity rates. The energy-efficient TSX Series freezers were designed with the environment in mind, which is a win for our company, our customers, and the planet.

References

1. epa.gov/snap
2. ec.europa.eu/clima/policies/f-gas_en
3. 90% diversion is based on internal audits. Certification is pending.
4. US EPA Greenhouse Gas Equivalencies Calculator, epa.gov/cleanenergy/energy-resources/calculator.html, accessed June 6, 2018.
5. Calculated from United States energy rates in the commercial sector available at eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_6_a, accessed June 6, 2018.

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