TSX Series high-performance refrigerators

Green benefits

- **Energy efficient—**with ENERGY STAR™ certification, uses up to 50% less energy than conventional models

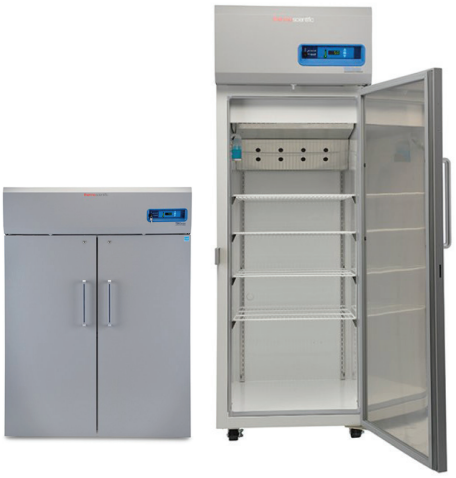
Introduction

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 refrigerators, including large-format models, meet ENERGY STAR criteria for lab-grade refrigerators and freezers, and are 4–50% more energy efficient compared to similar high-performance refrigerators.

Product description

The TSX Series high-performance refrigerators, 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 refrigerators 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 refrigerators save energy by utilizing a variable speed control system that adapts to user patterns.

In addition to these energy-saving features, the TSX Series refrigerators use non-hydrofluorocarbon (HFC) coolants, which helps reduce environmental impact and further increases cooling efficiency. HFC coolants 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.



TSX Series refrigerator TSX5005SA

TSX Series refrigerator TSX2303SA

Additionally, the foam insulation in these products 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–certified facility, which means that more than 90% of the waste generated at our manufacturing site is diverted from landfills [3].

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Green feature

Energy efficient

The TSX Series high-performance refrigerators are ENERGY STAR marked, meeting established ENERGY STAR certification criteria for lab-grade refrigerators and freezers. TSX Series models use from 4% to 50% less energy compared to other models (Tables 1 and 2). Power consumption (in kW) for all models is based on either ENERGY STAR specifications or manufacturer-published specifications with the temperature set to +4°C. Power consumption was measured for 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 shows the energy efficiency gain when switching to the specified TSX model from other suppliers' models shown (Tables 1 and 2).

Choosing the TSX5005SA refrigerator over the Helmer iLR256 model, for example, would reduce energy use by 24.3%, saving more than 830 kWh of energy over the course of a year. These savings represent 0.62 metric tons of CO_2 equivalents, or the greenhouse gas emissions from driving 1,525 miles in an average passenger car [4]. It also translates into energy cost savings of just over $87 per year [5], based on commercial-sector electricity rates. In addition to these energy savings benefits, the TSX Series large-format refrigerator emits less heat into the room, which may also help lower heating, ventilation, and air conditioning (HVAC) costs. A TSX5005SA refrigerator emits 90.4 BTU, compared to 2,030 BTU from a Thermo Scientific™ Revco™ x5004A refrigerator.

Other TSX high-performance refrigerators demonstrate similar energy savings. As another example, choosing the TSX2305SA high-performance laboratory refrigerator over the conventional Panasonic MPR-721-PA model would reduce energy use by 30.5%, saving more than 700 kWh of energy over the course of a year (Table 2). These savings represent 0.53 metric tons of CO_2 equivalents, or the greenhouse gas emissions from driving 1,300 miles in an average passenger car [4]. It also translates into energy cost savings of just over $75 per year [5], based on commercial-sector electricity rates. The energy-efficient TSX Series refrigerators were designed with the environment in mind, which is a win for our company, our customers, and the planet.

Table 1. Comparison of energy usage between TSX Series large-format high-performance refrigerator and conventional large-format refrigerators operating at +4°C.

Refrigerator model	Energy usage (kWh/day)	Energy use reduction by switching to TSX model	Cat. No.
Thermo Fisher Scientific	7.14	NA	TSX5005SA*
Helmer	9.43	24.3%	iLR256**
Follett	7.40	3.5%	REF45†
Panasonic	9.14	21.9%	MPR-1411-PA‡
Thermo Fisher Scientific, Revco refrigerators	14.3	50.1%	x5004A§

* energystar.gov/productfinder/product/certified-lab-grade-refrigeration/details/2319631
** energystar.gov/productfinder/product/certified-lab-grade-refrigeration/details/2296706
† follettice.com/ref45-upright-double-door-pharmacy-refrigerator
‡ energystar.gov/productfinder/product/certified-lab-grade-refrigeration/details/2296327
§ Data on file.

Table 2. Comparison of energy usage between TSX Series high-performance laboratory refrigerators and conventional laboratory refrigerators operating at +4°C.

Refrigerator model	Energy usage (kWh/day)	Energy use reduction by switching to TSX model	Cat. No.
Thermo Fisher Scientific	4.46	NA	TSX2305SA*
Helmer iL	7.04	36.6%	HLR125**
Helmer	6.55	31.9%	iLR125†
Panasonic	6.42	30.5%	MPR-721-PA‡

* energystar.gov/productfinder/product/certified-lab-grade-refrigeration/details/2319513
** energystar.gov/productfinder/product/certified-lab-grade-refrigeration/details/2296711
† energystar.gov/productfinder/product/certified-lab-grade-refrigeration/details/2296543
‡ energystar.gov/productfinder/product/certified-lab-grade-refrigeration/details/2296328

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 4 June 2018.
5. Calculated from United States energy rates in the commercial sector, eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_5_6_a, accessed 4 June 2018.

Find out more at **thermofisher.com/tsx**

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