

Thermo Scientific LYNX Superspeed Centrifuges



Greener by design™

-  **Less hazardous:**
First-to-market floor-model centrifuges that use R744 refrigerant (Global Warming Potential of 1)
-  **More energy efficient:**
Up to 13% lower energy consumption
-  **Extended life:**
Have an end-of-life recycling program¹

 Learn more at thermofisher.com/greenerbydesign

Introduction

We are committed to designing our products with the environment in mind. This fact sheet helps provide the rationale behind the environmental claims that the Thermo Scientific™ LYNX™ 4000 and 6000 Superspeed Centrifuges with GreenCool™ Technology are more energy efficient, contain less hazardous refrigerants and have an end-of-life recycling program as compared to prior models and other centrifuges currently on the market.

Product description

LYNX 4000 and 6000 superspeed centrifuges with GreenCool Technology bring outstanding power and enhanced sustainability to research and bioprocessing laboratories. Featuring a natural refrigerant (CO₂) cooling system, these centrifuges significantly reduce the environmental impact with a Global Warming Potential (GWP) of 1 and comply with upcoming EU and US EPA F-gas regulations. Additionally, these models use up to 13% less energy than prior models.

The LYNX series possesses class-leading features such as Thermo Scientific™ Fiberlite™ Carbon Fiber Rotors with their corrosion-resistant, durable, and lightweight design. The reduced weight also contributes to less energy consumption. They are repairable and are covered by a 15-year warranty, significantly longer than warranties for aluminum or titanium rotors.² The LYNX 6000 centrifuge features a Smart Vacuum System that can be activated only when required, reducing energy consumption for exceptional high speeds. The Green Mode setting puts the LYNX 4000 or LYNX 6000 in sleep mode (idle) when not in use for more than two hours.

Green features

Less hazardous

Thermo Fisher Scientific is committed to a more sustainable future by supporting U.S. Environmental Protection Agency and European Commission's efforts to transition to greener refrigerants by replacing hydrofluorocarbon (HFC) refrigerants. HFC refrigerants have been identified by the U.S. EPA and EU Commission as powerful greenhouse gases with significant global warming potential. Thermo Fisher Scientific is in the process of phasing out the use of these refrigerants in centrifuge products and are replacing them with more sustainable, natural refrigerant alternatives that have a significantly lower Global Warming Potential (GWP).

The Thermo Scientific LYNX series with GreenCool technology utilizes R744 (CO₂), a non-HFC alternative that has a lower GWP as compared to other refrigerants commonly used in refrigerated centrifuges (Table 1).



Figure 1. Thermo Scientific LYNX 4000 and 6000 Superspeed Centrifuges

More energy efficient

The centrifuges are now more energy efficient with the use of R744 when compared to other refrigerants such as R449A or even R452A. LYNX centrifuge with GreenCool technology has up to 13% lower energy consumption when compared to the legacy Thermo Scientific™ Sorvall™ LYNX model measured for a 1-hour run at maximum spin speed (Table 2).

Green Mode

To manage energy and environmental impact in high-use environments, the LYNX 4000 and LYNX 6000 Superspeed Centrifuges have a Green Mode setting, which puts a centrifuge in sleep mode (idle) when not in use for more than two hours. When the centrifuge is idle, this feature reduces energy usage by 64% compared to superspeed centrifuges without Green Mode (Table 3).

Smart Vaccum

The Smart Vacuum feature of the LYNX 6000 centrifuge enables additional energy savings. This feature removes up to 80% of the air inside the centrifuge chamber, minimizing air friction on the spinning rotor. As a result, it requires up to 74% less power to spin and cool the rotor when compared to identical run conditions on a previous generation of Thermo Scientific superspeed centrifuges (Table 4). As an added advantage, the Smart Vacuum system is turned on selectively based on the rotor and speed setting, unlike other centrifuge models on the market, which apply the vacuum uniformly. Choosing the LYNX 6000 centrifuge over a model without Smart Vacuum function can reduce energy use by up to 74%—saving 2,088 kWh of energy over the course of one year when in use for 4 hours per working day. The savings represent 1.4 metric tons of CO₂ equivalents, the greenhouse gas emissions from driving 3,570 miles in an average passenger car³. It also translates into energy cost savings of \$393 annually⁴, based on commercial sector electricity rates.

Table 1. Comparison of Global Warming Potential (GWP) of natural, synthetic, and hydrofluorocarbon (HFC) refrigerants commonly used in floor-standing high-speed centrifuges.

Name	GWP	Refrigerant class
R744	1	Natural (CO ₂)
R449A	1,396	Hydrofluorocarbon (HFC)/ Hydrofluoroolefin (HFO)
R410A	2,088	Hydrofluorocarbon (HFC)
R452A	2,140	Hydrofluoroolefin (HFO)

Table 2. Comparison of energy consumption of current and previous LYNX centrifuges*

Name	Frequency	Power consumption
Thermo Scientific LYNX 4000/ LYNX 6000 Centrifuges with GreenCool Technology	50 / 60 Hz	4,200 W
Legacy Thermo Scientific™ Sorvall™ LYNX 4000/ LYNX 6000 Centrifuges	50 Hz	4,600 W
	60 Hz	4,800 W

* Energy use measured for a 1-hour run at maximum spin speed and compared to previous 3-phase model.

Table 3. Comparison of energy consumption of superspeed centrifuges with and without Green Mode*

Name	Green Mode	Energy use (Wh)	Energy use reduction with LYNX centrifuges
LYNX 4000	Yes	43	—
LYNX 6000	Yes	43	—
Superspeed Centrifuge without Green Mode	No	122	64%

* Energy use while centrifuge is idle.

Table 4. Comparison of energy use of centrifuges with and without Smart Vacuum*

Name	Smart Vacuum	Energy use (Wh)	Energy use reduction with LYNX centrifuges
LYNX 6000	Yes	700	—
Superspeed Centrifuge without Smart Vacuum	No	2,700	74%

* Comparison of 6 x 1,000 mL rotors run at 8,500 rpm at 4°C.



Figure 2. Thermo Scientific Fiberlite Rotors

Fiberlite carbon fiber rotors

Fiberlite carbon fiber rotors weigh up to 60% less than aluminum rotors (Table 5), enabling faster acceleration and deceleration times and reduced energy consumption per run (Table 6). Fiberlite rotors also offer additional benefits that extend their useful lifespan beyond that of rotors made from aluminum and other metals. Carbon fiber composite rotors are corrosion resistant, unlike metal rotor surfaces that can be damaged by moisture, chemicals, or alkaline solutions. The Fiberlite rotors are also fatigue-resistant, which mitigates the effects of substantial load or stress that—due to high rotational speeds and repeat cycles—can threaten metal rotor structure by causing it to stretch and change in size. Such changes can limit rotor life or lead to failure. Fiberlite rotors, by contrast, can be repaired if damaged. They are backed by a 15-year warranty²; for comparison, Table 7 shows the more limited warranty coverage of metal rotors made of aluminum or titanium.

Extended life

LYNX Centrifuges with GreenCool technology are fully RoHS and WEEE compliant. These units are designed for longevity and when the unit is ready for retirement, we are partnering with reputable and certified recyclers in the United States to offer customers a way to recycle their used instruments. The materials can then reenter the manufacturing stream, which helps reduce additional mining of natural resources. Instructions on how to responsibly dispose of your centrifuge are offered at thermofisher.com/centrifuge-recycling.

Table 5. Comparison of weight of Fiberlite carbon fiber rotors and aluminum rotors.*

Rotor capacity	Rotor weight (kg)		Rotor weight difference (kg)	Weight reduction with Fiberlite rotors
	Fiberlite carbon fiber rotor	Aluminium rotor		
6 x 250 mL	8.0	14.0	6.0	43%
6 x 500 mL	8.6	21.4	12.8	60%
6 x 1,000 mL	15.2	20.9	5.7	27%

* Based on a comparison with the manufacturer's published specifications.

Table 6. Comparison of acceleration and deceleration rates of Fiberlite carbon fiber rotor and aluminum rotor.*

Rotor type and capacity	Acceleration time (hr:min)	Deceleration time (hr:min)	Total accel./decel. time (hr:min)
Fiberlite carbon fiber rotor, 6 x 250 mL	1:35	1:15	2:50
Aluminum rotor, 6 x 250 mL	3:45	2:00	5:45
Time saved	2:10	0:45	2:55

* Based on a comparison with the manufacturer's published specifications.

Table 7. Comparison of average warranty periods for Fiberlite carbon fiber rotor and metal rotors.*

Rotor type	Warranty (years)
Fiberlite carbon fiber rotor	15
Aluminum rotor**	7
Titanium rotor**	5

* Average warranty periods were calculated based on industry averages of years an aluminum or titanium rotor may be covered under warranty per manufacturers' published specifications.

** Warranty coverage may vary by rotor. Please refer to the manufacturer for specific warranty coverage for each rotor.

The Thermo Scientific™ LYNX 4000 and 6000 superspeed centrifuges with GreenCool Technology are designed for sustainability and energy efficiency while delivering excellent performance and versatility in the bioprocessing space. The improvement of the environmental impact includes a reduction in weight by average 35 kg (77 lbs) compared to previous models, which makes it much easier to transport and install in the lab. (LYNX 4000 centrifuge with GreenCool technology: 256 kg / 564 lbs; LYNX 6000 centrifuge with GreenCool technology: 266 kg / 586 lbs).

Our commitment to environmental responsibility doesn't end there. These centrifuges are manufactured in a certified zero-waste facility⁵ in Osterode am Harz, Germany using 100% renewable electricity.

Designing the Thermo Scientific LYNX Superspeed Centrifuge Series to contain less hazardous refrigerants, use less energy and have an end-of-life recycling program while delivering excellent versatility and performance is a win for our customers, our company and the planet.



References

1. Details on recycling program for United States can be found at <https://www.thermofisher.com/us/en/home/global/forms/life-science/centrifuge-recycling.html>
2. Subject to standard limited warranty by Thermo Fisher Scientific. See [thermofisher.com](https://www.thermofisher.com) or contact your sales representative for details.
3. US EPA Greenhouse Gas Equivalencies Calculator, <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>. Accessed 02 September, 2025.
4. Based on an energy rate of \$0.1363 as reported as the national average commercial rate by the US Energy Information Administration. <https://www.eia.gov/electricity/monthly>. Accessed 02 September, 2025.
5. Zero Waste is defined as diverting at least 90% of non-hazardous waste from landfill, waste to energy, and incineration.

 Find out more at thermofisher.com/centrifuges

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