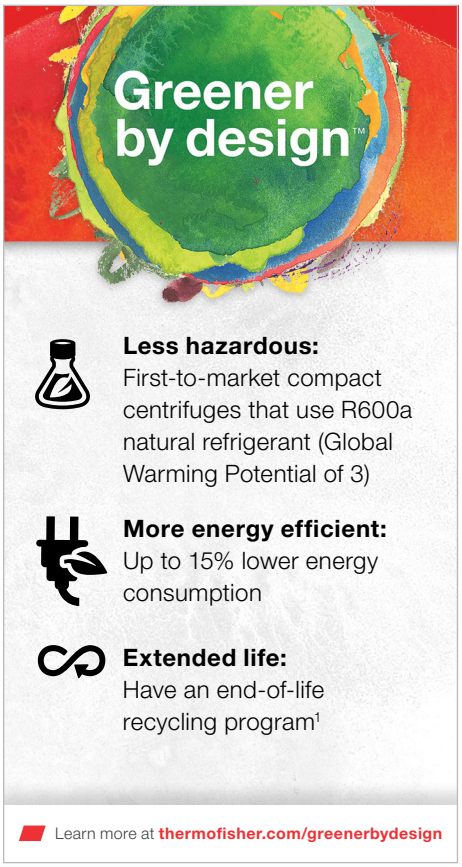
Thermo Scientific M Series Refrigerated Centrifuges



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™ M Series Compact Refrigerated Centrifuges 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

M Series centrifuges are designed to offer exceptional capacity in a compact design. The refrigerated models are equipped with Thermo Scientific™ GreenCool™ Technology, a next-generation natural refrigerant (hydrocarbon) cooling system. These centrifuges significantly reduce environmental impact with a Global Warming Potential (GWP) of 3 and comply with upcoming EU and US EPA F-gas regulations. Additionally, these models use up to 15% less energy than prior models.

Green features

Designed to reduce hazards

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).

Figure 1. Thermo Scientific M Series Refrigerated Centrifuges

The Thermo Scientific M series refrigerated centrifuges utilize R600a, a non-HFC alternative that has a lower GWP as compared to refrigerant options commonly used in refrigerated centrifuges (Table 1). R600a is a natural refrigerant that breaks down into carbon dioxide and water and does not release any polyfluoroalkyl substances (PFAS) byproducts into the environment. Studies have shown that synthetic low GWP refrigerant blends, like R1234yf, yield byproducts like TFA that may have adverse environmental impacts.[2]

More energy efficient

In addition to being less hazardous, the centrifuges are more energy efficient with the use of R600a compared to HFC refrigerants like R134a, which are commonly used in most current refrigerated centrifuges on the market.

The MTR benchtop centrifuge model have up to 15% lower energy consumption compared to the legacy Thermo Scientific™ Sorvall™ Legend Micro 21R Centrifuges that utilize traditional R134a HFC refrigerant

(Table 2). Additionally, R600a is known for its excellent thermodynamic properties and exceptional energy efficiency compared to R1234yf, as documented in comparative analysis studies testing the performance of these refrigerants in various industrial applications.[3]

Extended life

The M Series 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 collaborating 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.

Our commitment to environmental responsibility doesn't end there. These centrifuges are manufactured in a certified zero-waste facility in Osterode am Harz, Germany.[5]

Designing the Thermo Scientific M Series Centrifuges 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.

Table 1. Comparison of Global Warming Potential (GWP) of natural, synthetic, and hydrofluorocarbon (HFC) refrigerants.

Name	GWP	Refrigerant class
R600a	3	Hydrocarbon
R290	3	Hydrocarbon (HC)
R1234yf	4	Hydrofluoroolefin (HFO)
R134a	1,430	Hydrofluorocarbon (HFC)
R410A	2,088	Hydrofluorocarbon (HFC)
R404A	3,922	Hydrofluorocarbon (HFC)

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

Name	Voltage, frequency	Power consumption
Thermo Scientific MTR Centrifuge with GreenCool Technology	220–230 V, 50/ 60 Hz	**118 W**
Legacy Thermo Scientific™ Sorvall™ Legend Micro 21R Centrifuge	220–230 V, 50/ 60 Hz	**140 W**

* Energy use measured for a 1-hour cycle (10 min run, 10 min break, 3 times) run at 14000 rpm with 24 x 1.5/2 mL rotor at 4°C and compared to previous model.

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. R1234yf degrades into PFAS: https://pubmed.ncbi.nlm.nih.gov/29381347/
3. R290 vs R1234yf comparative study: https://www.sciencedirect.com/science/article/abs/pii/S0735193324004706
4. Subject to standard limited warranty by Thermo Fisher Scientific. See thermofisher.com or contact your sales representative for details.
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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