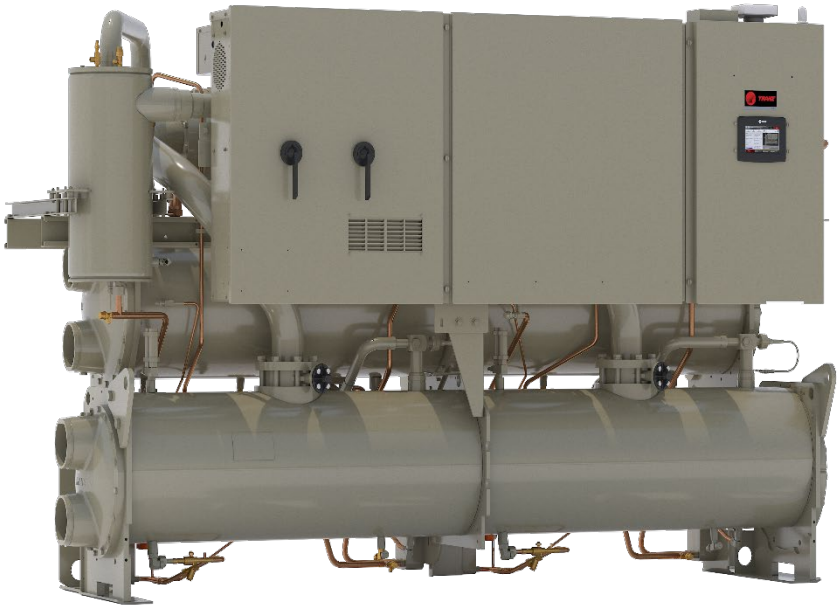

PEP Ecopassport®

Product Environmental Profile – RTWD Series R™ Helical Rotary Screw Chillers

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Product Environmental Profile - PEP Ecopassport.
Document in compliance with ISO 14025: 2006 "Environmental labels and declarations. Type III environmental declarations."

Company	Trane Technologies
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Registration Number	TRNE-10002-V01.03-EN

Company Description

Trane Technologies® is a world leader in heating and cooling systems, services, and solutions. Together with our brands, Trane® and Thermo King®, we bring efficient and sustainable climate innovations to buildings, homes, and transportation.

Trane helps customers succeed by providing innovative solutions that optimize indoor environments through a broad portfolio of energy-efficient heating, ventilating, and air conditioning systems, buildings, contracting and energy services, parts support, and advanced controls for homes and commercial buildings.

Trane serves engineers, contractors, and building owners on all continents and in an array of markets including education, healthcare, government, industrial/ manufacturing, data centers, lodging, retail, and commercial real estate. With more than 900 U.S. patents to date, Trane creates comfortable and energy-efficient environments around the world.

Trane systems and services have a reputation for reliability, high quality, and advanced innovation; and are available through a powerful distribution network. Trane employees and distributors are respected industry-wide for their skills and performance in designing, manufacturing, marketing, and supporting commercial and residential systems.

	Product Information
Reference Product	Series R™ Helical Rotary Screw Chiller Model RTWD
Product Description	The Trane® Series R™ RTWD helical rotary screw chiller offers versatility and reliability for commercial and industrial applications requiring precise temperature control for both comfort heating, low-temperature cooling, and process cooling needs. Capacity: 80–250 tons (600–3,000 MBH, 60 Hz). • **Application Flexibility:** Expanded heating capability up to 165°F (74°C) supports energy efficiency and enables boiler replacement across a wide range of applications. • **Reliable Performance:** Direct-drive helical rotary screw compressor, featuring fewer moving parts and premium bearings, delivers durability and reliable operation for demanding environments. • **Integrated Controls:** Symbio® 800 controller enables secure connectivity and integration with building automation systems. • **Space-Saving Design:** Compact footprint fits through a standard double door (72 x 80 inches) fully assembled, simplifying installation. • **Low-GWP Refrigerants:** Operates with R-515B for heating and R-513A for cooling to support sustainability targets and meet environmental standards.
Functional Unit	To produce 1 kW of cooling, according to the appropriate usage scenario defined the AHRI 550/590 standard and during the 22-year reference lifetime of the product
Declared Unit	To produce cooling thanks to water-to-water cooling of 769 kW according to the appropriate usage scenario and during the 22-year lifetime of the product. *Note: the mathematical relationship between the functional and declared unit is such that the declared unit divided by its capacity in kW equals the functional unit.*
Other Products Covered	List of other products covered in this PEP is presented in the section which concerned the extrapolation rules
Reference Lifetime*	22 Years

*Reference lifetime was defined as 22 years by the Product Category Rules which governed this analysis.

Technical Characteristics	
Data Point	**Series R™ Helical Rotary Screw Chiller Model RTWD**
Product Category	Chiller
Chiller Technology	Water to water
Reversible or Non-reversible	Non-reversible
Cooling Capacity*	218.6 tons 769 kW
NPLV*	21.285 BTU/W*hr 6.24 kW/kW
Refrigerant Used	R-513A
Refill Threshold**	90%

*Capacity and NPLV at AHRI 550/590 conditions
**Refill threshold denotes the ratio of refrigerant (expressed as a %) at which a refill back up to the original charge takes place. Per the Product Category Rules, the refill threshold is considered 90% by default.

Constituent Materials >> Total weight of the reference product: 4,349 kg					
Plastics as % of weight		**Metals as % of weight**		**Others as % of weight**	
Product only: 4,299 kg					
PVC	1.2%	Steel	50.2%	Refrigerant	3.8%
Other plastics	0.9%	Cast Iron	27.1%	Electronic components	1.0%
		Copper	12.7%	Other miscellaneous	1.1%
		Other metals	0.7%		
Packaging only: 50 kg					
Polyethylene	1.2%		0%		0%
Total plastics	**3.3%**	**Total metals**	**90.7%**	**Total others**	**6.0%**

	Life Cycle Stages
Manufacturing	The manufacturing stage includes the production of raw and intermediate materials, as well as transportation to the manufacturer's last logistic platform for RTWD chillers. The final assembly of the product is carried out at Trane's plant in Pueblo, Colorado, USA. As a member of SteelZero, Trane has pledged to procure, specify or stock 50% net-zero steel by 2030 and 100% net-zero steel by 2050. The main process steps for production include cutting, rolling, machining, brazing, welding, painting, sub- and final assemblies, and end-of-the-line testing.
Distribution	The transport from Trane's manufacturing facility to the customer was considered. The distance was calculated using averages for all shipped orders in 2024.
Installation	The installation stage includes diesel consumed by machinery used to move and place the product during installation. It also included disposal of the plastic film used to package the unit during transport.
Use	The use stage is conducted in alignment with the PSR, which models energy use of this water-cooled chiller associated with comfort cooling applications over its 22-year lifetime. The conditions outlined AHRI Standard 550/590 were used to set product capacity and efficiency. Refrigerant leak, replacement parts, and electricity usage are considered in this stage. Default refrigerant leak amounts from the PSR were used.
End of Life	The end-of-life stage includes transportation to the end-of-life facility of the disposal of product. End of life fates were modeled by material for the region where they are being disposed, in this case the United States.
Benefits and loads beyond the system boundaries	Throughout the life cycle of the product, net loads and benefits beyond system boundaries are included.

	Data Quality and Software
Geographical Representativeness	The geographical scope of this PEP is North America.
Temporal Representativeness	Primary data was collected from 2024. Secondary data refers to the Ecoinvent database published in 2023. The temporal coverage for each secondary process used in the LCA model is specified in the documentation section of individual Ecoinvent datasets.
Technological Representativeness	Overall technology representativeness is considered good.
Software and Database Used	Sima Pro desktop 9.6.0.1 Ecoinvent Database Version 3.10

	Energy Model Used
Manufacturing	Manufacturing electricity considers the eGRID specific region from which the product is being manufactured in Ecoinvent's datasets.
Distribution	No energy consumption occurs during the distribution stage.
Installation	No energy consumption occurs during the installation stage.
Use	Use stage electricity is modeled using an average North American grid mix dataset.
End of Life	No energy consumption occurs during the end-of-life stage.
Benefits and loads beyond the system boundaries	End of life benefits consider average North American electricity.

Environmental Impacts

EN 15804 + A2 Environmental Impact Indicators, per kW corresponding to the functional unit												
		Total Life Cycle Impacts (Excluding Module D)		Manufacturing A1-A3	Distribution A4	Installation A5	Use B1	Maintenance B2	Operational Energy Use B6	Water Use B7	End of Life C1-C4	Module D
Climate change - total	GWP	**9.49E+02**	kg CO2 eq	3.08E+01	9.40E-01	1.69E-01	9.64E-02	3.71E-01	9.00E+02	1.66E-04	1.65E+01	-1.66E+00
Climate change - fossil fuels	GWPf	**9.40E+02**	kg CO2 eq	3.05E+01	9.40E-01	1.69E-01	9.64E-02	3.71E-01	8.92E+02	1.39E-04	1.55E+01	-1.65E+00
Climate change - biogenics	GWPb	**6.72E+00**	kg CO2 eq	2.70E-01	1.09E-04	1.72E-05	0.00E+00	7.52E-05	5.47E+00	2.65E-05	9.83E-01	-7.02E-03
Climate change - land use and land use transformation	GWPlu	**2.73E+00**	kg CO2 eq	2.08E-02	2.71E-05	3.91E-06	0.00E+00	1.27E-05	2.71E+00	1.30E-07	1.12E-04	-5.90E-04
Ozone depletion	ODP	**1.72E-04**	kg CFC-11 eq	1.67E-04	1.24E-08	1.56E-09	0.00E+00	5.71E-09	4.76E-06	6.67E-12	1.44E-08	-1.09E-08
Acidification	AP	**2.73E+00**	mole of H+ eq	3.72E-01	2.47E-03	3.65E-04	0.00E+00	1.45E-03	2.35E+00	1.38E-06	2.40E-03	5.69E-02
Eutrophication, freshwater	Epf	**6.46E-02**	kg P eq	3.03E-03	2.29E-06	2.85E-07	0.00E+00	8.49E-07	6.15E-02	6.28E-09	3.09E-05	1.05E-04
Eutrophication, marine aquatic	Epm	**3.92E-01**	kg of N eq	3.41E-02	8.88E-04	1.42E-04	0.00E+00	5.86E-04	3.55E-01	1.34E-07	2.03E-03	4.91E-04
Eutrophication, terrestrial	Ept	**4.43E+00**	mole of N eq	4.06E-01	9.73E-03	1.53E-03	0.00E+00	6.49E-03	4.00E+00	1.49E-06	8.64E-03	1.32E-02
Photochemical ozone formation	POCP	**1.79E+00**	kg NMVOC eq	1.40E-01	3.68E-03	5.59E-04	0.00E+00	2.46E-03	1.64E+00	5.12E-07	3.30E-03	3.32E-03
Abiotic resource depletion – elements	ADPe	**5.58E-03**	kg Sb eq	5.54E-03	5.50E-08	7.66E-09	0.00E+00	2.19E-08	4.46E-05	4.70E-09	1.31E-07	9.35E-04
Abiotic resource depletion – fossil fuels	ADPf	**1.74E+04**	MJ	3.37E+02	1.24E+01	1.52E+00	0.00E+00	4.92E+00	1.70E+04	1.76E-03	9.34E+00	-1.54E+01
Water use	WU	**2.27E+02**	m3 world eq	9.72E+00	1.14E-02	2.59E-03	0.00E+00	4.61E-03	2.18E+02	1.56E-02	-2.01E-01	6.48E-01

Note: characterization factors use the -1/+1 biogenic carbon storage assessment methodology

Inventory Flow Indicators, per kW corresponding to the functional unit												
		Total Life Cycle Impacts (Excluding Module D)		Manufacturing A1-A3	Distribution A4	Installation A5	Use B1	Maintenance B2	Operational Energy Use B6	Water Use B7	End of Life C1-C4	Module D
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	PERE	**2.42E+03**	MJ	4.62E+01	1.99E-02	2.89E-03	0.00E+00	1.05E-02	2.37E+03	1.46E-04	1.30E-01	-3.16E-02
Use of renewable primary energy resources used as raw materials	PERM	**8.36E+00**	MJ	8.36E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	PERT	**2.42E+03**	MJ	5.45E+01	1.99E-02	2.89E-03	0.00E+00	1.05E-02	2.37E+03	1.46E-04	1.30E-01	-3.16E-02
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	PENRM	**1.09E+01**	MJ	1.09E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-1.03E+00
Use of non-renewable primary energy resources used as raw materials	PENRE	**1.74E+04**	MJ	3.26E+02	1.24E+01	1.52E+00	0.00E+00	4.92E+00	1.70E+04	1.76E-03	9.34E+00	-1.44E+01
Total use of non-renewable primary energy resources	PENRT	**1.74E+04**	MJ	3.37E+02	1.24E+01	1.52E+00	0.00E+00	4.92E+00	1.70E+04	1.76E-03	9.34E+00	-1.54E+01
Use of secondary materials	USM	**3.58E+00**	kg	3.58E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	URSF	**0.00E+00**	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	UNRSF	**0.00E+00**	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	NUFW	**1.09E+01**	m3	2.81E-01	4.16E-04	9.28E-05	0.00E+00	1.83E-04	1.06E+01	3.62E-04	-4.41E-03	1.13E-02
Hazardous waste disposed	HWD	**4.66E-01**	kg	2.11E-02	1.01E-04	3.27E-04	0.00E+00	4.17E-05	4.42E-01	9.17E-08	2.02E-03	-5.26E-04
Non-hazardous waste disposed	NHWD	**1.61E+01**	kg	2.19E+00	5.14E-04	1.16E-02	0.00E+00	1.99E-04	8.48E+00	1.93E-06	5.38E+00	5.10E-03
Radioactive waste disposed	RWD	**9.56E-02**	kg	5.34E-04	4.46E-07	6.35E-08	0.00E+00	2.32E-07	9.51E-02	2.77E-09	3.55E-06	6.22E-06
Components for re-use	CRU	**0.00E+00**	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	MFR	**5.20E+00**	kg	1.38E+00	0.00E+00	1.13E-02	0.00E+00	0.00E+00	0.00E+00	0.00E+00	3.81E+00	0.00E+00
Materials for energy recovery	MER	**0.00E+00**	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	EE	**1.07E+00**	MJ	3.45E-02	0.00E+00	1.21E-01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.12E-01	0.00E+00

TRACI 2.1 Environmental Impact Indicators, per kW corresponding to the functional unit												
		Total Life Cycle Impacts (Excluding Module D)		Manufacturing A1-A3	Distribution A4	Installation A5	Use B1	Maintenance B2	Operational Energy Use B6	Water Use B7	End of Life C1-C4	Module D
Ozone depletion	OD	**2.18E-04**	kg CFC-11 eq	2.08E-04	1.31E-08	1.65E-09	0.00E+00	6.05E-09	1.01E-05	7.35E-12	1.55E-08	-1.17E-08
Global warming	GW	**9.34E+02**	kg CO2 eq	3.04E+01	9.29E-01	1.67E-01	9.00E-02	3.67E-01	8.87E+02	1.47E-04	1.51E+01	-1.61E+00
Smog	SG	**2.43E+01**	kg O3 eq	2.01E+00	5.64E-02	8.94E-03	2.24E-05	3.78E-02	2.21E+01	8.40E-06	5.21E-02	2.67E-02
Acidification	A	**2.30E+00**	kg SO2 eq	2.97E-01	2.22E-03	3.82E-04	0.00E+00	1.32E-03	1.99E+00	1.12E-06	2.16E-03	4.31E-02
Eutrophication	E	**5.32E-01**	kg N eq	3.32E-02	1.51E-04	2.57E-05	0.00E+00	8.67E-05	4.97E-01	7.54E-08	1.82E-03	8.50E-04
Carcinogenics	C	**3.90E-06**	CTUh	1.46E-06	6.78E-10	8.82E-10	7.93E-13	6.19E-10	2.42E-06	2.54E-12	2.04E-08	6.17E-08
Non carcinogenics	NC	**7.02E-05**	CTUh	3.41E-05	1.47E-07	2.37E-08	2.89E-13	9.24E-09	3.57E-05	4.71E-11	1.98E-07	4.82E-06
Respiratory effects	RE	**1.43E+00**	kg PM2.5 eq	4.94E-02	3.77E-04	9.70E-05	0.00E+00	1.79E-04	1.38E+00	1.70E-07	3.73E-04	2.54E-03
Ecotoxicity	EX	**2.74E+02**	CTUe	1.41E+02	3.07E+00	6.59E-01	0.00E+00	8.10E-02	1.27E+02	2.12E-04	2.56E+00	-1.86E+01
Fossil fuel depletion	FFD	**1.10E+03**	MJ surplus	2.87E+01	1.75E+00	2.15E-01	0.00E+00	6.94E-01	1.07E+03	1.54E-04	1.23E+00	-8.26E-01

EN 15804 + A2 Environmental Impact Indicators, per device corresponding to the reference product												
		Total Life Cycle Impacts (Excluding Module D)		Manufacturing A1-A3	Distribution A4	Installation A5	Use B1	Maintenance B2	Operational Energy Use B6	Water Use B7	End of Life C1-C4	Module D
Climate change - total	GWP	**7.30E+05**	kg CO2 eq	2.37E+04	7.23E+02	1.30E+02	7.41E+01	2.85E+02	6.92E+05	1.28E-01	1.27E+04	-1.27E+03
Climate change - fossil fuels	GWPf	**7.23E+05**	kg CO2 eq	2.35E+04	7.23E+02	1.30E+02	7.41E+01	2.85E+02	6.86E+05	1.07E-01	1.19E+04	-1.27E+03
Climate change - biogenics	GWPb	**5.17E+03**	kg CO2 eq	2.08E+02	8.42E-02	1.32E-02	0.00E+00	5.78E-02	4.21E+03	2.04E-02	7.56E+02	-5.40E+00
Climate change - land use and land use transformation	GWPlu	**2.10E+03**	kg CO2 eq	1.60E+01	2.08E-02	3.00E-03	0.00E+00	9.73E-03	2.08E+03	9.98E-05	8.65E-02	-4.54E-01
Ozone depletion	ODP	**1.32E-01**	kg CFC-11 eq	1.29E-01	9.57E-06	1.20E-06	0.00E+00	4.39E-06	3.66E-03	5.13E-09	1.11E-05	-8.40E-06
Acidification	AP	**2.10E+03**	mole of H+ eq	2.86E+02	1.90E+00	2.80E-01	0.00E+00	1.12E+00	1.81E+03	1.06E-03	1.85E+00	4.37E+01
Eutrophication, freshwater	Epf	**4.96E+01**	kg P eq	2.33E+00	1.76E-03	2.19E-04	0.00E+00	6.53E-04	4.73E+01	4.83E-06	2.37E-02	8.04E-02
Eutrophication, marine aquatic	Epm	**3.02E+02**	kg of N eq	2.62E+01	6.83E-01	1.09E-01	0.00E+00	4.50E-01	2.73E+02	1.03E-04	1.56E+00	3.77E-01
Eutrophication, terrestrial	Ept	**3.40E+03**	mole of N eq	3.12E+02	7.48E+00	1.18E+00	0.00E+00	4.99E+00	3.07E+03	1.15E-03	6.64E+00	1.02E+01
Photochemical ozone formation	POCP	**1.38E+03**	kg NMVOC eq	1.08E+02	2.83E+00	4.29E-01	0.00E+00	1.89E+00	1.26E+03	3.94E-04	2.54E+00	2.55E+00
Abiotic resource depletion – elements	ADPe	**4.29E+00**	kg Sb eq	4.26E+00	4.23E-05	5.89E-06	0.00E+00	1.68E-05	3.43E-02	3.61E-06	1.01E-04	7.19E-01
Abiotic resource depletion – fossil fuels	ADPf	**1.34E+07**	MJ	2.59E+05	9.52E+03	1.17E+03	0.00E+00	3.78E+03	1.31E+07	1.35E+00	7.18E+03	-1.19E+04
Water use	WU	**1.75E+05**	m3 world eq	7.47E+03	8.78E+00	1.99E+00	0.00E+00	3.54E+00	1.67E+05	1.20E+01	-1.54E+02	4.98E+02

Note: characterization factors use the -1/+1 biogenic carbon storage assessment methodology

Inventory Flow Indicators, per device corresponding to the reference product												
		Total Life Cycle Impacts (Excluding Module D)		Manufacturing A1-A3	Distribution A4	Installation A5	Use B1	Maintenance B2	Operational Energy Use B6	Water Use B7	End of Life C1-C4	Module D
Use of renewable primary energy, excluding renewable primary energy resources used as raw materials	PERE	**1.86E+06**	MJ	3.55E+04	1.53E+01	2.23E+00	0.00E+00	8.06E+00	1.82E+06	1.13E-01	1.00E+02	-2.43E+01
Use of renewable primary energy resources used as raw materials	PERM	**6.43E+03**	MJ	6.43E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources	PERT	**1.86E+06**	MJ	4.19E+04	1.53E+01	2.23E+00	0.00E+00	8.06E+00	1.82E+06	1.13E-01	1.00E+02	-2.43E+01
Use of non-renewable primary energy, excluding non-renewable primary energy resources used as raw materials	PENRM	**8.40E+03**	MJ	8.40E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	-7.94E+02
Use of non-renewable primary energy resources used as raw materials	PENRE	**1.34E+07**	MJ	2.51E+05	9.52E+03	1.17E+03	0.00E+00	3.78E+03	1.31E+07	1.35E+00	7.18E+03	-1.11E+04
Total use of non-renewable primary energy resources	PENRT	**1.34E+07**	MJ	2.59E+05	9.52E+03	1.17E+03	0.00E+00	3.78E+03	1.31E+07	1.35E+00	7.18E+03	-1.19E+04
Use of secondary materials	USM	**2.75E+03**	kg	2.75E+03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels	URSF	**0.00E+00**	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels	UNRSF	**0.00E+00**	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Net use of fresh water	NUFW	**8.35E+03**	m3	2.16E+02	3.20E-01	7.14E-02	0.00E+00	1.41E-01	8.14E+03	2.79E-01	-3.39E+00	8.69E+00
Hazardous waste disposed	HWD	**3.58E+02**	kg	1.62E+01	7.74E-02	2.51E-01	0.00E+00	3.21E-02	3.40E+02	7.05E-05	1.55E+00	-4.04E-01
Non-hazardous waste disposed	NHWD	**1.23E+04**	kg	1.68E+03	3.95E-01	8.92E+00	0.00E+00	1.53E-01	6.52E+03	1.48E-03	4.13E+03	3.92E+00
Radioactive waste disposed	RWD	**7.35E+01**	kg	4.10E-01	3.43E-04	4.88E-05	0.00E+00	1.78E-04	7.31E+01	2.13E-06	2.73E-03	4.78E-03
Components for re-use	CRU	**0.00E+00**	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling	MFR	**3.99E+03**	kg	1.06E+03	0.00E+00	8.68E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	2.93E+03	0.00E+00
Materials for energy recovery	MER	**0.00E+00**	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy	EE	**8.21E+02**	MJ	2.66E+01	0.00E+00	9.28E+01	0.00E+00	0.00E+00	0.00E+00	0.00E+00	7.01E+02	0.00E+00

TRACI 2.1 Environmental Impact Indicators, per device corresponding to the reference product												
		Total Life Cycle Impacts (Excluding Module D)		Manufacturing A1-A3	Distribution A4	Installation A5	Use B1	Maintenance B2	Operational Energy Use B6	Water Use B7	End of Life C1-C4	Module D
Ozone depletion	OD	**1.68E-01**	kg CFC-11 eq	1.60E-01	1.01E-05	1.27E-06	0.00E+00	4.65E-06	7.74E-03	5.65E-09	1.19E-05	-9.00E-06
Global warming	GW	**7.18E+05**	kg CO2 eq	2.34E+04	7.14E+02	1.28E+02	6.92E+01	2.82E+02	6.82E+05	1.13E-01	1.16E+04	-1.24E+03
Smog	SG	**1.87E+04**	kg O3 eq	1.55E+03	4.34E+01	6.88E+00	1.72E-02	2.90E+01	1.70E+04	6.46E-03	4.00E+01	2.05E+01
Acidification	A	**1.77E+03**	kg SO2 eq	2.28E+02	1.70E+00	2.94E-01	0.00E+00	1.02E+00	1.53E+03	8.58E-04	1.66E+00	3.31E+01
Eutrophication	E	**4.09E+02**	kg N eq	2.55E+01	1.16E-01	1.97E-02	0.00E+00	6.67E-02	3.82E+02	5.80E-05	1.40E+00	6.54E-01
Carcinogenics	C	**3.00E-03**	CTUh	1.12E-03	5.21E-07	6.78E-07	6.10E-10	4.76E-07	1.86E-03	1.95E-09	1.57E-05	4.74E-05
Non carcinogenics	NC	**5.40E-02**	CTUh	2.62E-02	1.13E-04	1.82E-05	2.22E-10	7.10E-06	2.75E-02	3.62E-08	1.53E-04	3.71E-03
Respiratory effects	RE	**1.10E+03**	kg PM2.5 eq	3.80E+01	2.90E-01	7.45E-02	0.00E+00	1.37E-01	1.06E+03	1.31E-04	2.87E-01	1.96E+00
Ecotoxicity	EX	**2.11E+05**	CTUe	1.08E+05	2.36E+03	5.07E+02	0.00E+00	6.23E+01	9.75E+04	1.63E-01	1.97E+03	-1.43E+04
Fossil fuel depletion	FFD	**8.48E+05**	MJ surplus	2.21E+04	1.34E+03	1.65E+02	0.00E+00	5.33E+02	8.23E+05	1.18E-01	9.48E+02	-6.35E+02

Extrapolation Factors

RTWD products are part of a homogenous family of Trane chillers. Additional products covered by this PEP are detailed below, with the reference product denoted in blue.

RTWD 80
RTWD 90
RTWD 100
RTWD 110
RTWD 120
RTWD 130
RTWD 140
RTWD 150
RTWD 160
RTWD 180
RTWD 200
RTWD 220
RTWD 250

For products other than the reference product, the environmental impacts can be calculated using the extrapolation rules below. The following tables contain factors to be used in the extrapolation of LCIA results for the RTWD Chillers covered in this report. These scaling factors are intended to allow interested parties to determine the environmental impacts of RTWD products of interest.

Extrapolation coefficients are given for the environmental impact of the functional unit, i.e. the emission of 1 kW cooling power. For each stage of the life cycle, the environmental impacts of the product concerned are calculated by multiplying the impacts of the declaration corresponding to the reference product by the extrapolation coefficient. The "Total" column should be calculated by adding the environmental impacts of each stage of the life cycle.

To use these scaling factors, individuals should:

1. Identify the LCIA result of interest and product of interest.
2. Multiply the results in the reference product's environmental impact indicator table, found on page 4-7, by the corresponding cell in the table that pertains to the product of interest, found below.

	Extrapolation Factors – Declared Unit									Extrapolation Factors – Functional Unit								
Product	A1-A3	A4	A5	B1	B2	B6	B7	C1-C4	D	A1-A3	A4	A5	B1	B2	B6	B7	C1-C4	D
RTWD 90	0.59	0.59	0.59	1.00	1.00	0.46	1.00	0.59	0.59	1.44	1.44	1.44	2.45	2.45	1.12	2.45	1.44	1.44
RTWD 100	0.64	0.64	0.64	1.00	1.00	0.52	1.00	0.64	0.64	1.38	1.38	1.38	2.18	2.18	1.12	2.18	1.38	1.38
RTWD 110	0.66	0.66	0.66	1.00	1.00	0.59	1.00	0.66	0.66	1.28	1.28	1.28	1.95	1.95	1.14	1.95	1.28	1.28
RTWD 120	0.66	0.66	0.66	1.00	1.00	0.62	1.00	0.66	0.66	1.19	1.19	1.19	1.81	1.81	1.13	1.81	1.19	1.19
RTWD 130	0.66	0.66	0.66	1.00	1.00	0.67	1.00	0.66	0.66	1.12	1.12	1.12	1.69	1.69	1.14	1.69	1.12	1.12
RTWD 150	0.80	0.80	0.80	1.00	1.00	0.70	1.00	0.80	0.80	1.24	1.24	1.24	1.56	1.56	1.09	1.56	1.24	1.24
RTWD 160	0.85	0.85	0.85	1.00	1.00	0.75	1.00	0.85	0.85	1.22	1.22	1.22	1.44	1.44	1.08	1.44	1.22	1.22
RTWD 180	0.85	0.85	0.85	1.00	1.00	0.82	1.00	0.85	0.85	1.12	1.12	1.12	1.31	1.31	1.08	1.31	1.12	1.12
RTWD 200	0.86	0.86	0.86	1.00	1.00	0.90	1.00	0.86	0.86	1.03	1.03	1.03	1.20	1.20	1.09	1.20	1.03	1.03
RTWD 220	0.95	0.95	0.95	1.00	1.00	0.92	1.00	0.95	0.95	1.04	1.04	1.04	1.09	1.09	1.01	1.09	1.04	1.04
RTWD 250	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Comparability

EPDs published within the same product category, though originating from different programs, may not be comparable. Full conformance with a PCR allows PEP comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible.

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PEPs are compliant with XP C08-100-1:2016 and EN 50693:2019 The components of the present PEP may not be compared with components from any other program.	
Document complies with ISO 14025:2006 "Environmental labels and declarations. Type III environmental declarations"	

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