

F-Gas Compliant Cooling



ENCLOSURES

POWER DISTRIBUTION

CLIMATE CONTROL

IT INFRASTRUCTURE

SOFTWARE & SERVICES

F-Gas Compliant Cooling

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F-Gas Compliant Cooling

Initial situation: EU climate target

Over the last 100 years, the average temperature on Earth has risen by approximately 1° C.



With even higher values expected in the future, experts anticipate collapsing ecosystems.



At the World climate Conference, 195 countries therefore agreed to limit global warming.



The centerpiece of the European **Green Deals**, which aims to make the EU climate neutral

F-Gase-Regulation (EU) 2024/573
since 11.03.2024 in force

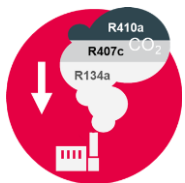
Predecessor: F-Gas-Regulation (EU) Nr. 517/2014 since 01.01.2015

F-Gas Compliant Cooling

F-Gas regulation revision

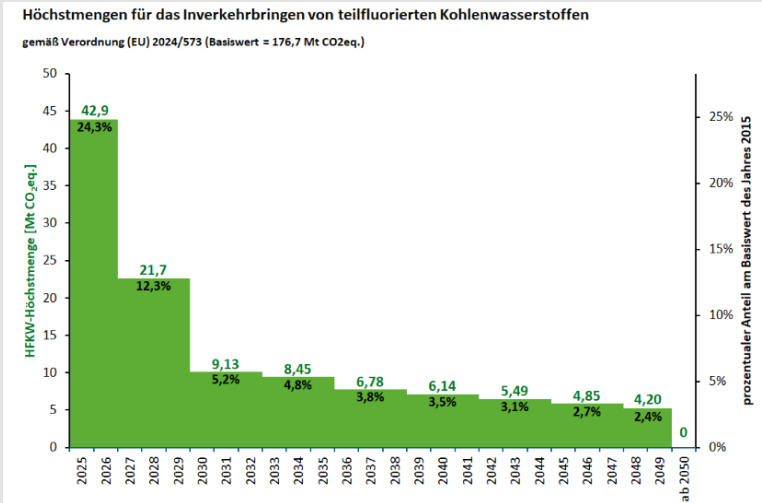
Revision of the regulation (EU) Nr. 2024/573

Tightening since
11.03.2024 in force



Regulatory approaches

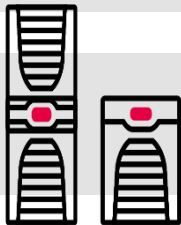
- 1 Accelerated phase-down of the quantities of F-gases available to zero by 2050
- 2 Enactment of **further bans on use and marketing** if technically feasible, more climate-friendly alternatives are available
- 3 Retention and supplementation of **regulations** on emission limits, leak tests, certification, disposal and labelling



Source: Umweltbundesamt
The graph describes the steps leading up to the phase-out in 2050. The available quantities will be halved in 2027 and again in 2030.



This results in new requirements for our climate control products and the refrigerants that can be used.



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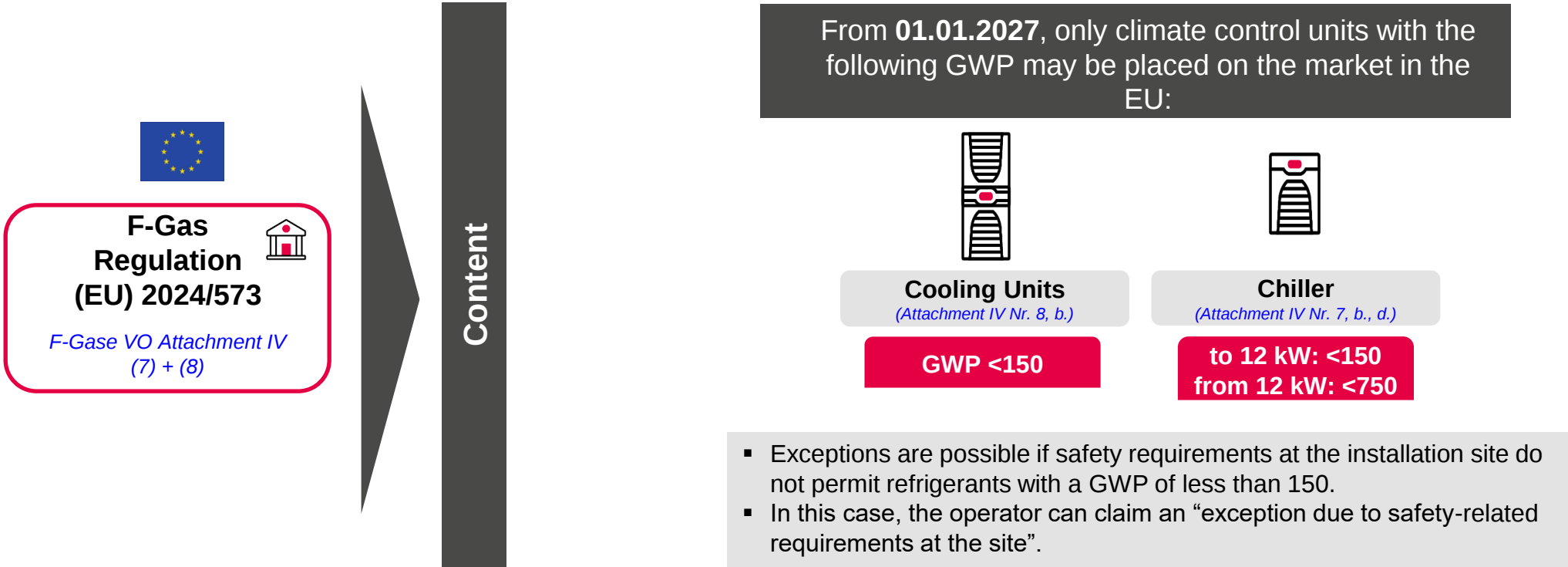
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F-Gas Compliant Cooling

F-Gase regulation revision

Tightening of the currently valid F-gas Regulation



F-Gas Compliant Cooling Portfolio

The entire Generation Blue e+ portfolio will be converted to the refrigerant R-1234yf.



A portfolio that already complies with the requirements of the F-Gas Regulation in 2026.

Affected product groups:

- Blue e+ S cooling units 0,3 – 1,0 kW
- Blue e+ cooling units 1,5 – 5,5 kW (*including derivatives*)

Advantages:

- Price neutral compared to R-513A cooling units, including a price reduction of up to 9%
- Products are given a new item number
- Dimensions and mounting cut-outs for Blue e+ (R-513A) remain identical
- Cooling capacity only slightly lower for Blue e+ S refrigeration units (e.g. 1 kW → 0.92 kW)
- Blue e+ cooling units are already stored in RiTherm.
- BAFA-eligible (only in Germany) for replacement projects.

F-Gas Compliant Cooling

Portfolio: Cooling Units



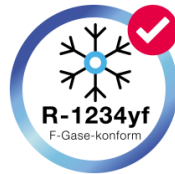
Version	performance class	ALT: Article number refrigerant R-513A (GWP 631)	Availability (R-513A)	NEW: Article number Refrigerant R-1234yf (GWP 0,5)	Availability (R-1234yf)
Blue e+ wall-mounted cooling units					
sheet steel	300 W	3178800	available	3478800	Available
	300 W	3178801	available	3478801	
	500 W	3179800	available	3479800	
	500 W	3179801	available	3479801	
	750 W	3180800	available	3480800	
	1000 W	3184800	available	3484800	
	1000 W	3184840	available	3484840	
	1500 W	3185830	available	3485830	
	2000 W	3186930	available	3486930	
	2500 W	3187930	available	3487930	
stainless steel	4000 W	3188940	available	3488940	April 2026 (CW 16)
	6000 W	3189940	available	3489940	April 2026 (CW 16)
	1500 W	3185530	available	3485530	April 2026 (CW 16)
	2000 W	3186630	available	3486630	April 2026 (CW 16)
	2500 W	3187630	available	3487630	April 2026 (CW 16)
Outdoor	4000 W	3188640	available	3488640	April 2026 (CW 16)
	6000 W	3189640	available	3489640	April 2026 (CW 16)
	1500 W	3185330	available	3485330	April 2026 (CW 16)
	2000 W	3186330	available	3486330	April 2026 (CW 16)
	2500 W	3187330	available	3487330	April 2026 (CW 16)
chemistry version	4000 W	3188340	available	3488340	April 2026 (CW 16)
	5000 W	3189340	available	3489340	April 2026 (CW 16)
	1500 W	3185835	available	3485835	April 2026 (CW 16)
	2000 W	3186935	available	3486935	April 2026 (CW 16)
	2500 W	3187935	available	3487935	April 2026 (CW 16)
IT Bundle	4000 W	3188945	available	3488945	April 2026 (CW 16)
	5000 W	3189945	available	3489945	April 2026 (CW 16)
	2500 W	3312810	available	3412810	April 2026 (CW 16)
	1000 W	3184837	available	3484837	April 2026 (CW 16)
Dynamic	1500 W	3185837	available	3485837	April 2026 (CW 16)
	2000 W	3186937	available	3486937	April 2026 (CW 16)
	2500 W	3187937	available	3487937	April 2026 (CW 16)
	1000 W	3184837	available	3484837	April 2026 (CW 16)
Blue e+ roof-mounted cooling units					
Standard	1500 W	3185730	available	3485730	June 2026 (CW 25)
IT Bundle	1500 W	3312800	available	3412800	June 2026 (CW 25)

Product prices
are included in the current
Rittal price list.

Quotations can
be provided
for all cooling units.

F-Gas Compliant Cooling Portfolio

The entire Generation Blue e+ portfolio will be converted to the refrigerant R-1234yf.



A portfolio that already complies with the requirements of the F-Gas Regulation in 2026

Affected product groups:

- Blue e+ Chillers 1,5 – 7,0 kW *(including derivatives)*

Advantages:

- Products receive a new article number
- Dimensions remain identical to Blue e+ (R-513A)
- BAFA-eligible (only in Germany) for replacement projects

F-Gas Compliant Cooling

Portfolio: Chiller



Version	performance class	ALT: Article number refrigerant R-513A (GWP 631)	Availability (R-513A)	NEW: Article number Refrigerant R-1234yf (GWP 0,5)	Availability (R-1234yf)
Blue e+ Chiller					
Standard	1500 W	3319100	available	3419100	June 2026
	2500 W	3320200	available	3420200	June 2026
	4000 W	3334300	available	3434300	June 2026
	5500 W	3334400	available	3434400	June 2026
	7000 W	3334450	available	3434450	June 2026
Outdoor	4000 W	3334369	available	3434360	June 2026
	5500 W	3334469	available	3434460	June 2026
	7000 W	3334479	available	3434470	June 2026
Hybrid IT	5000 W	3334440	available	3434440	June 2026
	7000 W	3334480	available	3434480	June 2026

The list prices will be added to the current Rittal price list shortly.

Quotations cannot be prepared yet.

F-Gas Compliant Cooling

BAFA-Funding



Exchange projects

- Blue e+ portfolio with R-1234yf is eligible for BAFA funding (GWP 0.5)
- Funding opportunities according to Module 4 (premium funding)

Important prerequisite:

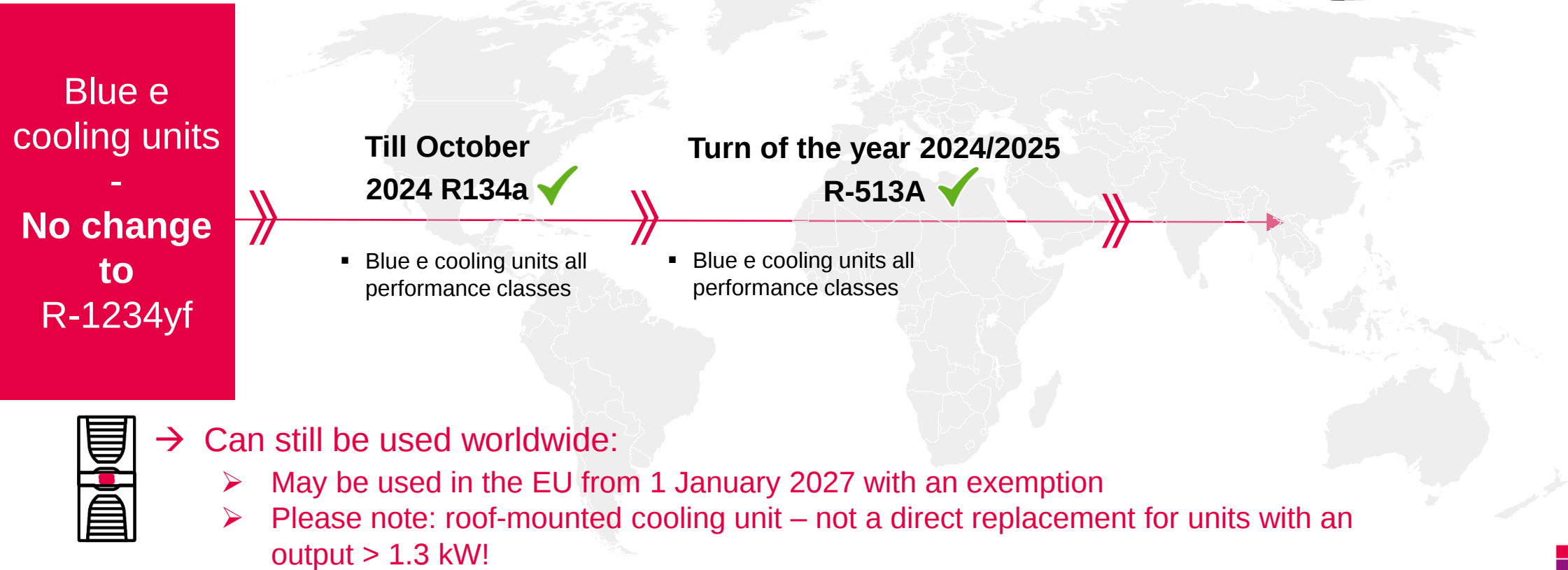
- The payback period (pb) for the entire project must be more than >3 years without the use of funding
- Proof of proper/professional disposal via a proof of use
- The maximum subsidy for related measures is 20 million euros

Are you planning efficiency or modernisation measures?

Contact us for a consultation with our specialists.

F-Gas Compliant Cooling

Availability: Blue e cooling units with R-513A



F-Gas Compliant Cooling Exemption

F-Gas Regulation (EU) 2024/573

F-Gas VO Attachment IV (7) + (8)

From **01.01.2027**, only air conditioning units with the following GWP may be placed on the market in the EU:

Cooling Units

(Attachment IV Nr. 8, b.)

GWP <150



Chiller

(Attachment IV Nr. 7, b., d.)

**to 12 kW: <150
from 12 kW: <750**



Use of R-513A (GWP 631) still possible after 2027

Exceptions are possible if safety requirements at the installation site do not permit refrigerants with a GWP lower than 150.

In this case, the operator can claim an **'exception due to safety-related requirements at the site'**.

GWP-limit value

Cooling Units:
GWP-limit value 750

Chiller:
from 12 kW: <750

Reasons for using the exemption

- Special safety requirements apply at some locations
- E.g. from the Machinery Directive, the Industrial Safety Regulation, the Fire Protection Regulation or the Explosion Protection Regulation
- For these reasons, those responsible on site may decide that refrigerants with a GWP > 150 are still permitted.

Important is

- The decision lies with the operator.
- No official approval is required.
- The decision must be documented in a comprehensible manner.
- If the operator is unable to assess this independently, they should seek expert assistance from a refrigeration and air conditioning specialist or an expert.

F-Gas Compliant Cooling

Exemption

Labelling requirement from 1 January 2027 for products containing R-513A refrigerant

Manufacturers and operators are obliged to label their products!



F-Gase DVO (EU) 2024/2174
article 1, paragraph 12

1

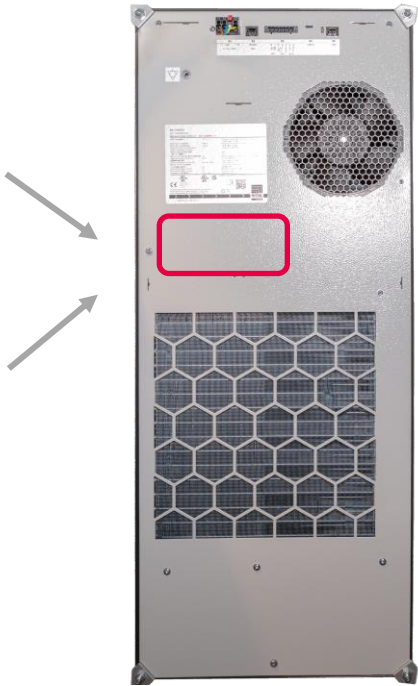
Sticker is enclosed with the shipping bag (Rittal)

Prohibition of operation, unless this is necessary due to safety requirements applicable at the site.

2

Reference to the applicable safety requirement (e.g. Machinery Directive) (Operator)

- Fire risk in the event of refrigerant leakage (see Regulation (EU) 2023/1230 Annex III Part B Section 1.5.6)
- Explosion risk in the event of refrigerant leakage (see Regulation (EU) 2023/1230 Annex III Part B Section 1.5.7)



F-Gas Compliant Cooling

Risk analysis

Why is this necessary with R-1234yf or R-290?

Risk analyses are required for A2L refrigerants in accordance with standards and legislation. They are treated as equivalent to A3 refrigerants and are mandatory. Standards such as EN378, ASHRAE 15, IOR Safety Code of Practice, IEC/UL 60335-2-89 and safety guidelines explicitly treat A2L as “flammable refrigerants”.

However:

They are not as strict as for A3 refrigerants.

Refrigerant	Class	Flammability	GWP
R-513A	A1	non-flammable	middle
R-1234yf	A2L	mildly flammable	very low
R-290 (Propane)	A3	highly flammable	extremely low

R-513A (A1-GWP 631)

offers maximum safety, but no lasting GWP advantage.

R-1234yf (A2L-GWP 0,5)

is today's ‘low GWP standard’ with manageable safety requirements

R-290 (A3-GWP 3)

is ecologically optimal, but the most demanding in terms of safety.



F-Gas Compliant Cooling

Risk analysis for Blue e+ with R-1234yf

Considerations made during product development

Rittal has carried out a conservative risk analysis for the Blue e+ units with the refrigerant R-1234yf:

- **Classification:** „Low Risk“
- **Probability** of occurrence of a critical event: < **1:1.000.000**
- **Permissible filling quantities** are **significantly undercut** in all performance classes
- **Standard limit values for refrigerant R-1234yf according to:**
 - EN/IEC 60335-2-40: 1,734 kg
 - UL 60335-2-40: 1,734 kg
 - EN 378-2: Defined by the volume at the installation site
- All Rittal cooling units and chillers are below the permissible limits, above which safety measures are required at the installation site.
→ Therefore, **no additional measures** are necessary, such as: leakage sensors, forced ventilation, special shutdown mechanisms
- The installation site and thus the arrangement of the cooling unit and chiller must be selected in such a way that **good ventilation and air extraction** are guaranteed. Regardless of the refrigerant used, all enclosure cooling units require sufficient circulation so that they can dissipate their heat load to the ambient air.

Certified safety

Rittal devices with R-1234yf comply with among others:

EN/IEC 60335-2-40

for CE and international approvals

Safety of household and similar electrical appliances – Part 2-40: Particular requirements for electrically operated heat pumps, air conditioners and room air dehumidifiers

UL 60335-2-40

specifically for UL approval in North America

Safety of household and similar electrical appliances – Part 2-40: Particular requirements for electrically powered heat pumps, air conditioners and room air dehumidifiers

Machine builders can incorporate the assessment in full into their own risk assessment.

Important safety information can be found in the installation and operating instructions.

Applicable standards (including the Machinery Directive) are confirmed in the CE declaration

F-Gas Compliant Cooling

Export business



Impact on export business outside the EU

- **Ban from 12. March 2025:**
The export of certain new products and equipment that contain or require fluorinated greenhouse gases with a global warming potential (GWP) of 1000 or more is prohibited.
- **Note:**
Air conditioning products containing the refrigerant R-513A (GWP 631) may continue to be exported.

F-Gas Compliant Cooling

F-Gas Portal



F-Gas Portal

- Due to the stricter EU F-Gas Regulation, more companies now have to register on the EU F-Gas Portal.
- Implementing Regulation EU 2024/2473 was published on 20 September 2024 and will apply from 10 October 2024.
- Among other things, it requires companies to be registered on the EU F-Gas Portal for the import and export of F-gases and products and equipment outside the EU.
- Official registration on the F-Gas Portal can be done via this EU page: [F-gas Portal - Fluorinated Greenhouse Gases – Climate Action](#)

F-Gas Compliant Cooling

Additional documents

Additional documents

Landingpage	RiTherm	Product description	Position paper	Whitepaper
Information about the F-gas Regulation and the refrigerant changeover on the Rittal homepage 	- Planning tool for enclosure climate control - Support in complying with international F-gas regulations and checking the air conditioning design	- Access to all technical data - Downloads (assembly instructions, safety data sheets, approvals, etc.) available	Background information on the F-Gas Regulation → Embedded on the Landingpage	Background information on the F-Gas Regulation, refrigerants, maintenance, transport, etc. → Embedded on the Landingpage
Link	Link	Link	Link	Link