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**COMMISSION DELEGATED REGULATION (EU) .../...**

**of XXX**

**implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for professional refrigerated storage cabinets, scientific and healthcare refrigerated storage cabinets, blast cabinets, condensing units and process chillers.**

(Text with EEA relevance)

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# COMMISSION DELEGATED REGULATION (EU) .../...

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**implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for professional refrigerated storage cabinets, scientific and healthcare refrigerated storage cabinets, blast cabinets, condensing units and process chillers.**

(Text with EEA relevance)

## *Article 1*

### **Subject matter and scope**

1. This Regulation establishes ecodesign requirements for the placing on the market of professional refrigerated storage cabinets and blast cabinets.

This Regulation shall apply to electric mains-operated blast cabinets, and electric mains-operated professional refrigerated storage cabinets including those sold for the refrigeration of foodstuffs and animal feed.

However, it shall not apply to the following products:

- (a) professional refrigerated storage cabinets that are primarily powered by energy sources other than electricity;
- (b) professional refrigerated storage cabinets operating with a remote condensing unit;
- (c) open cabinets, where being open is a fundamental requirement for their primary functionality;
- (d) cabinets specifically designed for food processing, where the mere presence of one compartment, with a net volume equivalent to less than 20 % of the cabinet's total net volume and specifically designed for food processing is not sufficient for exemption;
- (e) cabinets specifically designed only for the purpose of thawing frozen foodstuffs in a controlled manner, where the mere presence of one compartment specifically designed for thawing frozen foodstuffs in a controlled manner is not sufficient for exemption;
- (f) saladettes;

- (g) serve-over counters and other similar forms of cabinets primarily intended for display and sale of foodstuffs in addition to refrigeration and storage;
  - (h) cabinets that do not use a vapour compression refrigeration cycle;
  - (i) blast cabinets and blast rooms with a capacity superior to 300 kg of foodstuffs;
  - (j) continuous-process blast equipment;
  - (k) custom-made professional refrigerated storage cabinets and blast cabinets, made on a one-off basis according to individual customer specification and not equivalent to other professional refrigerated storage cabinets as described in definition 16 of Annex I or blast cabinets as described in definition 17 of Annex I;
  - (l) built-in cabinets;
  - (m) roll-in and pass-through cabinets;
  - (n) static air cabinets;
  - (o) chest freezers.
2. This Regulation also establishes ecodesign requirements for the placing on the market of scientific and healthcare refrigerated storage cabinets.
- This Regulation shall apply to electric mains-operated refrigerated storage cabinets intended for use in laboratory research and healthcare environments including for scientific samples, plasma and blood products and cooled pharmaceutical products at chilled, frozen and ultra-low temperature applications.
4. However, it shall not apply to the following types of scientific and healthcare refrigerated storage cabinets:
- (a) those primarily powered by energy sources other than electricity;
  - (b) those operating with a remote condensing unit;
  - (c) open cabinets, where their openness is a fundamental requirement for their primary functionality;

- (d) custom-made cabinets, made on a one-off basis according to individual customer specification and not equivalent to other storage cabinets as described in definition 18 of Annex I;
  - (e) those with a gross internal volume exceeding 2000 litres;
  - (f) those designed for transportation;
  - (g) those with a primary function other than cold storage;
  - (h) ultra-low temperature cabinets operating primarily below -90 °C.
3. This Regulation also establishes ecodesign requirements for the placing on the market of condensing units operating at low or medium temperature or both.

However, it shall not apply to the following products:

- (a) condensing units including an evaporator, which may be an integral evaporator, such as in monobloc units, or a remote evaporator, such as in split units;
  - (b) compressor packs or racks, which do not include a condenser;
  - (c) condensing units of which the condenser-side does not use air as heat transfer medium.
4. This Regulation also establishes ecodesign requirements for the placing on the market of process chillers intended to operate at low or medium temperature.

However, it shall not apply to the following products:

- (a) process chillers intended to operate at high temperature;
- (b) process chillers exclusively using evaporative condensing;
- (c) custom-made process chillers assembled on site, made on a one-off basis;
- (d) absorption chillers.

## *Article 2*

## Definitions

1. The following definitions shall apply:

- (a) 'professional refrigerated storage cabinet' means an insulated refrigerating appliance integrating one or more compartments accessible via one or more doors or drawers, capable of continuously maintaining the temperature of foodstuffs within prescribed limits at chilled or frozen operating temperature, using a vapour compression cycle, and intended for the storage of foodstuffs in non-household environments but not for the display to or access by customers;
- (b) 'blast cabinet' means an insulated refrigerating appliance primarily intended to rapidly cool hot foodstuffs to below 10 °C in the case of chilling and below – 18 °C in the case of freezing;
- (c) 'blast room' means an enclosure, for which the doorway and internal space is large enough for a person to step inside, primarily intended to rapidly cool hot foodstuffs to below 10 °C in the case of chilling and below – 18 °C in the case of freezing;
- (d) 'capacity' means, for blast cabinets, the food weight which can be processed (by the blast cabinet) to below 10 °C in the case of chilling and below – 18 °C in the case of freezing in a single operation;
- (e) 'continuous process blast equipment' means a blast cabinet provided with a conveyor belt to feed foodstuff through, to allow continuous process for blast chilling or freezing of the foodstuff;
- (f) 'foodstuffs' means food, ingredients, beverages, including wine, and other items primarily intended for consumption which require refrigeration at specified temperatures;
- (g) 'built-in cabinet' means a fixed insulated refrigerating appliance intended to be installed in a cabinet, in a prepared recess in a wall or similar location, and requiring furniture finishing;
- (h) 'roll-in cabinet' means a professional refrigerated storage cabinet including one unique compartment that allows wheeled racks of product to be wheeled in;
- (i) 'pass-through cabinet' means a professional refrigerated storage cabinet accessible from both sides;

- (j) 'static air cabinet' means a professional refrigerated storage cabinet without internal forced-air circulation, specifically designed to store temperature-sensitive foodstuffs or to avoid a drying effect on foodstuffs stored without a sealed enclosure, where a single static air compartment within the cabinet is not sufficient to designate the cabinet as a static air cabinet;
- (k) 'heavy-duty cabinet' means a professional refrigerated storage cabinet capable of continuously maintaining chilled or frozen operating temperature in all its compartment(s) in ambient conditions corresponding to climate class 5, as detailed in Table 3 of Annex IV;
- (l) 'open cabinet' means a professional refrigerated storage cabinet whose refrigerated enclosure can be reached from the outside without opening a door or a drawer, where the mere presence of one compartment which can be reached from the outside without opening a door or a drawer, with a net volume equivalent to less than 20 % of the professional refrigerated storage cabinet's total volume, is not sufficient to qualify it as such;
- (m) 'saladette' means a professional refrigerated storage cabinet with one or more doors or drawer fronts in the vertical plane that has cut-outs in the top surface into which temporary storage bins can be inserted for easy-access storage of foodstuffs such as, but not limited to, pizza toppings or salad items;
- (n) 'chest freezer' means a food freezer in which the compartment(s) is accessible from the top of the appliance or which has both top-opening type and upright type compartments but where the gross volume of the top-opening type compartment(s) exceeds 75 % of the total gross volume of the appliance;
- (o) 'scientific and healthcare refrigerated storage cabinet' means an insulated refrigerating appliance integrating one or more compartments accessible via one or more doors or drawers, capable of continuously and reliably maintaining the temperature of stored products and samples within prescribed limits at chilled or frozen operating temperature, using a vapour compression cycle, and intended for the storage of scientific samples, plasma and blood products and cooled pharmaceutical products in scientific or healthcare environments;
- (p) 'plasma' means ...
- (q) 'blood products' means ...
- (r) 'pharmaceutical products' means ...

- (s) 'scientific samples' means ...
- (t) 'condensing unit' means a product integrating at least one electrically driven compressor and one condenser, capable of cooling down and continuously maintaining low or medium temperature inside a refrigerated appliance or system, using a vapour compression cycle once connected to an evaporator and an expansion device;
- (u) 'low temperature' means that the condensing unit is capable of delivering its rated cooling capacity at a saturated evaporating temperature of  $-35\text{ }^{\circ}\text{C}$ ;
- (v) 'medium temperature' means that the condensing unit is capable of delivering its rated cooling capacity at a saturated evaporating temperature of  $-10\text{ }^{\circ}\text{C}$ ;
- (w) 'rated cooling capacity' means the cooling capacity which the condensing unit allows the vapour compression cycle to reach, once connected to an evaporator and an expansion device, when operating at full load, and measured at standard rating conditions with the reference ambient temperature set at  $32\text{ }^{\circ}\text{C}$ , expressed in kW;
- (x) 'process chiller' means a product integrating at least one compressor and one evaporator, capable of cooling down and continuously maintaining the temperature of a liquid in order to provide cooling to a refrigerated appliance or system; it may or may not integrate the condenser, the coolant circuit hardware and other ancillary equipment;
- (y) 'low temperature' means that the process chiller is capable of delivering its rated cooling capacity at an indoor heat exchanger outlet temperature of  $-25\text{ }^{\circ}\text{C}$ , at standard rating conditions;
- (z) 'medium temperature' means that the process chiller is capable of delivering its rated cooling capacity at an indoor heat exchanger outlet temperature of  $-8\text{ }^{\circ}\text{C}$ , at standard rating conditions;
- (aa) 'high temperature' means that the process chiller is capable of delivering its rated cooling capacity at an indoor heat exchanger outlet temperature of  $7\text{ }^{\circ}\text{C}$ , at standard rating conditions;
- (bb) 'rated cooling capacity', expressed in kW, means the cooling capacity that the process chiller is able to reach, when operating at full load, and measured at standard rating conditions with the reference ambient temperature at  $35\text{ }^{\circ}\text{C}$  for

air-cooled chillers and 30 °C water inlet temperature at the condenser for water-cooled chillers.

- (cc) ‘compressor pack’ or ‘compressor rack’ means a product incorporating at least one or more electrically driven refrigeration compressor(s) and a control system;
- (dd) ‘absorption chiller’ means a process chiller in which refrigeration is effected by an absorption process using heat as the energy source;
- (ee) ‘evaporative condensing chiller’ means a process chiller equipped with an evaporating condenser, in which the refrigerant is cooled by a combination of air movement and water spray.

### *Article 3*

#### **Ecodesign requirements and timetable**

1. The ecodesign requirements for professional refrigerated storage cabinets are set out in Annex II and shall apply from the dates indicated therein.
2. The ecodesign requirements for scientific and healthcare refrigerated storage cabinets are set out in Annex V and shall apply from the dates indicated therein.
3. The ecodesign requirements for blast cabinets are set out in Annex VI and shall apply from the dates indicated therein.
4. The ecodesign requirements for condensing units are set out in Annex VIII and shall apply from the dates indicated therein.
5. The ecodesign requirements for process chillers are set out in Annex X and shall apply from the dates indicated therein.
6. Compliance with ecodesign requirements for professional refrigerated storage cabinets shall be measured and calculated in accordance with the methods set out in Annexes III and IV.
7. Compliance with ecodesign requirements for scientific and healthcare refrigerated storage cabinets shall be measured and calculated in accordance with the methods set out in Annex V.



8. Compliance with ecodesign requirements for blast cabinets shall be measured and calculated in accordance with the methods set out in Annex VII.
9. Compliance with ecodesign requirements for condensing units shall be measured and calculated in accordance with the methods set out in Annex IX.
10. Compliance with ecodesign requirements for process chillers shall be measured and calculated in accordance with the methods set out in Annex XI.

#### *Article 4*

### **Conformity assessment**

1. The conformity assessment procedure referred to in Article 8 of Directive 2009/125/EC shall be the internal design control set out in Annex IV to that Directive or the management system for assessing conformity set out in Annex V to that Directive.
2. For the purposes of conformity assessment pursuant to Article 8 of Directive 2009/125/EC, the technical documentation shall contain a copy of the product information provided in accordance with Annex II, Annex V, Annex VI, Annex VIII and Annex X to this Regulation, and the details and the results of the calculations set out in Annex III, Annex IV, Annex VII, Annex IX and Annex XI to this Regulation.
3. Where the information included in the technical documentation for a particular model has been obtained:
  - (a) from a model that has the same technical characteristics relevant for the technical information to be provided but is produced by a different manufacturer, or
  - (b) by calculation on the basis of design or extrapolation from another model of the same or a different manufacturer, or both,the technical documentation shall include the details of such calculation, the assessment undertaken by the manufacturer to verify the accuracy of the calculation and, where appropriate, the declaration of identity between the models of different manufacturers.

The technical documentation shall include a list of all equivalent models, including the model identifiers.
4. The technical documentation shall include the information in the order and as set out in Annex VI to Delegated Regulation (EU) 20YY/XXX [EL professional refrigeration products]. For market surveillance purposes, manufacturers, importers or authorised representatives may, without prejudice to point 2(g) of Annex IV to Directive 2009/125/EC, refer to the technical documentation uploaded to the product database

which contains the same information laid down in Delegated Regulation (EU) 20YY/XXX [EL professional refrigeration products].

#### *Article 5*

### **Verification procedure for market surveillance purposes**

Member State authorities shall apply the verification procedure laid down in Annex XIII, Annex XIV, Annex XV and Annex XVI when performing the market surveillance checks referred to in Article 3(2) of Directive 2009/125/EC.

#### *Article 6*

### **Circumvention and software updates**

1. Manufacturers, importers or authorised representatives shall not place on the market products designed to be able to detect they are being tested, and to react specifically by automatically altering their performance during the test with the aim of reaching a more favourable level for any of the parameters declared by the manufacturer, importer or authorised representative in the technical documentation or included in any documentation provided.
2. The energy consumption of the product and any of the other declared parameters shall not deteriorate after an operating system software update or a firmware update when measured with the same test standard originally used for the declaration of conformity, except with the explicit consent of the end-user prior to the update. No performance change shall occur as a result of rejecting the update, except for third-party application software.
3. A software update shall never have the effect of changing the product's performance in a way that makes it non-compliant with the ecodesign requirements applicable for the declaration of conformity

#### *Article 7*

### **Indicative benchmarks**

The indicative benchmarks for best-performing professional refrigerated storage cabinets, scientific and healthcare refrigerated storage cabinets, blast cabinets, condensing units and

process chillers available on the market at the time of entry into force of this Regulation are set out in Annex XVII.

## *Article 7*

### **Review**

The Commission shall review this Regulation in the light of technological progress and present the results of that review to the Consultation Forum established pursuant to Article 18 of Directive 2009/125/EC of the European Parliament and of the Council no later than five years from the date of entry into force of this Regulation. This review shall in particular assess the following:

1. for professional refrigerated storage cabinets, an assessment of the appropriateness of introducing, in particular:
  - (a) the appropriateness to set additional resource efficiency requirements in accordance with the objectives of the circular economy, including whether more spare parts should be included;
  - (b) ecodesign requirements for cabinets listed in Article 1(1);
  - (c) a method for determining the standard annual energy consumption for refrigerator-freezers;
2. for blast cabinets, an assessment of the appropriateness of introducing energy labelling requirements for these products;
3. for walk-in cold rooms, an assessment of the appropriateness of introducing ecodesign requirements for these products;
4. for condensing units and process chillers an assessment of the appropriateness of setting ecodesign requirements covering direct greenhouse gas emissions related to refrigerants;
5. for all products, a check if newer versions of quoted sources are available for GWP values;

6. for all products, the value of the admitted tolerances in the verification procedure for the measured value of the energy consumption.

#### *Article 8*

#### **Repeal**

Commission Regulation (EU) 2015/1095 is repealed as from **one year after entry into force of this regulation.**

#### *Article 9*

#### **Entry into force**

This Regulation shall enter into force on the twentieth day following that of its publication in the *Official Journal of the European Union*.

It shall apply from **one year after entry into force of this Regulation.** However, the first paragraph of Article 6 shall apply from **8 months after entry into force of this Regulation.**

This Regulation shall be binding in its entirety and directly applicable in all Member States.

Done at Brussels, **[date]**.

*For the Commission*

*The President*

Ursula VON DER LEYEN

## ANNEX I

### Definitions applicable to the Annexes

#### Definitions related to professional, scientific and healthcare refrigerated storage cabinets and blast cabinets

- (1) 'net volume' means the volume containing foodstuffs within the load limit;
- (2) 'chilled operating temperature' means that the temperature of foodstuffs stored in the professional refrigerated storage cabinet is continuously maintained at a temperature between  $-1\text{ }^{\circ}\text{C}$  and  $5\text{ }^{\circ}\text{C}$ ;
- (3) 'frozen operating temperature' means that the temperature of foodstuffs stored in the professional refrigerated storage cabinet is continuously maintained at a temperature lower than  $-15\text{ }^{\circ}\text{C}$ , which is understood as the highest temperature of the warmest package test;
- (4) 'blast chilling cycle' means cooling of hot foodstuff in a blast cabinet to below  $10\text{ }^{\circ}\text{C}$  within 120 minutes;
- (5) 'blast freezing cycle' means cooling of hot foodstuff in a blast cabinet to below  $-18\text{ }^{\circ}\text{C}$  within 270 minutes;
- (6) 'blast chiller' means a blast cabinet intended to rapidly cool down foodstuff to below  $10\text{ }^{\circ}\text{C}$ ;
- (7) 'blast freezer' means a blast cabinet intended to rapidly cool down foodstuff to below  $-18\text{ }^{\circ}\text{C}$ ;
- (8) 'multi-use blast cabinet' means a blast cabinet intended to rapidly cool down foodstuff to below both  $10\text{ }^{\circ}\text{C}$  and  $-18\text{ }^{\circ}\text{C}$ ;
- (9) 'multi-use cabinet' means that a professional refrigerated storage cabinet or separate compartment of the same cabinet may be set at different temperatures for chilled or frozen foodstuffs;
- (10) 'combined cabinet' means a professional refrigerated storage cabinet including two or more compartments with different temperatures for the refrigeration and storage of foodstuffs;

- (11) 'refrigerator-freezer' means a type of combined cabinet including at least one compartment exclusively intended for chilled operating temperature and one compartment exclusively intended for frozen operating temperature;
- (12) 'vertical cabinet' means a professional refrigerated storage cabinet of overall height equal to or higher than 1 050 mm with one or more front doors or drawers accessing the same compartment;
- (13) 'counter cabinet' means a professional refrigerated storage cabinet of overall height lower than 1 050 mm with one or more front doors or drawers accessing the same compartment;
- (14) 'light-duty cabinet', also known as 'semi-professional cabinet', means a professional refrigerated storage cabinet only capable of continuously maintaining chilled or frozen operating temperature in all its compartment(s) in ambient conditions corresponding to climate class 3, as detailed in Table 3 of Annex IV; if the cabinet is able to maintain temperature in ambient conditions corresponding to climate class 4, it shall not be considered a light-duty cabinet;
- (15) 'standard duty cabinet' means a professional refrigerated storage cabinet capable of continuously maintaining chilled or frozen operating temperature in all its compartment(s) in ambient conditions corresponding to climate class 4, as detailed in Table 3 in Annex IV;
- (16) 'equivalent professional refrigerated storage cabinet' means a professional refrigerated storage cabinet model placed on the market with the same net volume, same technical, efficiency and performance characteristics, and same compartment types and volumes as another professional refrigerated storage cabinet model placed on the market under a different commercial code number by the same manufacturer;
- (17) 'equivalent blast cabinet' means a blast cabinet model placed on the market with the same technical, efficiency and performance characteristics, as another blast cabinet model placed on the market under a different commercial code number by the same manufacturer;
- (18) 'equivalent scientific or healthcare refrigerated storage cabinet' means a scientific or healthcare refrigerated storage cabinet model placed on the market with the same net volume, same technical, efficiency and performance characteristics, and same compartment types and volumes as another scientific or healthcare refrigerated storage cabinet model placed on the market under a different commercial code number by the same manufacturer;

#### **Definitions related to condensing units**

- (19) ‘rated cooling capacity’ ( $P_A$ ) means the cooling capacity that the condensing unit enables the vapour compression cycle to reach, once connected to an evaporator and an expansion device, when operating at full load, and measured at standard rating conditions with the reference ambient temperature set at 32 °C, expressed in kW to two decimal places;
- (20) ‘rated power input’ ( $D_A$ ) means the electrical power input needed by the condensing unit (including the compressor, the condenser fan(s) and possible auxiliaries) to reach the rated cooling capacity, expressed in kW to two decimal places;
- (21) ‘rated coefficient of performance’ ( $COP_A$ ) means the rated cooling capacity, expressed in kW, divided by the rated power input, expressed in kW, expressed to two decimal places;
- (22) ‘coefficients of performance  $COP_B$ ,  $COP_C$  and  $COP_D$ ’ mean the cooling capacity, expressed in kW, divided by the power input, expressed in kW, expressed to two decimal places at rating points B, C and D;
- (23) ‘seasonal energy performance ratio’ ( $SEPR$ ) is the efficiency ratio of a condensing unit for providing cooling at standard rating conditions, representative of the variations in load and ambient temperature throughout the year, and calculated as the ratio between annual cooling demand and annual electricity consumption, expressed to two decimal places;
- (24) ‘annual cooling demand’ means the sum of each bin-specific cooling demand multiplied by the corresponding number of bin hours;
- (25) ‘bin-specific cooling demand’ means the cooling demand for every bin in the year, calculated as the rated cooling capacity multiplied by the part load ratio, expressed in kW to two decimal places;
- (26) ‘part load’ ( $P_c(T_j)$ ) means the cooling load at a specific ambient temperature  $T_j$ , calculated as the full load multiplied by the part load ratio corresponding to the same ambient temperature  $T_j$  and expressed in kW at two decimal places;
- (27) ‘part load ratio’ ( $PR(T_j)$ ) at a specific ambient temperature  $T_j$  means the ambient temperature  $T_j$  minus 5 °C divided by the reference ambient temperature minus 5 °C, and — for medium temperature — multiplied by 0,4 and added to 0,6, and — for low temperature — multiplied by 0,2 and added to 0,8. For ambient temperatures higher than the reference ambient temperature, the part load ratio shall be 1. For ambient temperatures lower than 5 °C, the part load ratio shall be 0,6 for medium temperature

and 0,8 for low temperature. The part load ratio can be expressed at three decimal places or in percentage, after multiplying by 100, at one decimal place;

- (28) 'annual electricity consumption' is calculated as the sum of the ratios between each bin-specific cooling demand and the corresponding bin-specific coefficient of performance, multiplied by the corresponding number of bin hours;
- (29) 'ambient temperature' means the dry bulb air temperature, expressed in degrees Celsius;
- (30) 'bin' ( $bin_j$ ) means a combination of an ambient temperature  $T_j$  and bin hours  $h_j$ , as set out in Table 8 of Annex IX;
- (31) 'bin hours' ( $h_j$ ) means the hours per year at which an ambient temperature occurs for each bin, as set out in Table 8 of Annex IX;
- (32) 'reference ambient temperature' means the ambient temperature, expressed in degrees Celsius, at which the part load ratio is equal to 1. It is set at 32 °C;
- (33) 'bin-specific coefficient of performance' ( $COP_j$ ) means the coefficient of performance for every bin in the year, derived from the part load, the declared cooling demand and declared coefficient of performance for specified bins, and calculated for other bins by linear interpolation, corrected where necessary by the degradation coefficient;
- (34) 'declared cooling demand' means the cooling demand at a limited number of specified bins, and calculated as the rated cooling capacity multiplied by the corresponding part load ratio;
- (35) 'declared coefficient of performance' means the coefficient of performance at a limited number of specified bins, and calculated as the declared cooling capacity divided by the declared power input;
- (36) 'declared cooling capacity' means the cooling capacity which the unit delivers to meet the specific cooling demand at a limited number of specified bins, expressed in kW to two decimal places;
- (37) 'declared power input' means the electrical power input needed by the condensing unit to meet the declared cooling capacity, expressed in kW to two decimal places;



- (38) ‘degradation coefficient’ ( $Cdc$ ) is set at 0,25 and means the measure of efficiency loss due to the possible on/off cycling of condensing units necessary to satisfy the required part load in case the unit's capacity control cannot unload to the required part load;
- (39) ‘capacity control’ means the ability of a condensing unit to change its capacity by changing the volumetric flow rate of the refrigerant, to be indicated as ‘fixed’ if the unit cannot change its volumetric flow rate, ‘staged’ if the volumetric flow rate is changed or varied in series of not more than two steps, or ‘variable’ if the volumetric flow rate is changed or varied in series of three or more steps;

### Definitions related to process chillers

- (40) ‘rated cooling capacity’ ( $P_A$ ), expressed in kW to two decimal places, means the cooling capacity that the process chiller is able to reach, when operating at full load, and measured at standard rating conditions with the reference ambient temperature at 35 °C for air-cooled chillers and 30 °C water inlet temperature at the condenser for water-cooled chillers;
- (41) ‘rated power input’ ( $D_A$ ) means the electrical power input needed by the process chiller (including the compressor, the condenser fan(s) or pumps(s), the evaporator pump(s) and possible auxiliaries) to reach the rated cooling capacity, expressed in kW to two decimal places;
- (42) ‘rated energy efficiency ratio’ ( $EER_A$ ) means the rated cooling capacity, expressed in kW, divided by the rated power input, expressed in kW, expressed to two decimal places;
- (43) ‘seasonal energy performance ratio’ ( $SEPR$ ) is the efficiency ratio of a process chiller for providing cooling at standard rating conditions, representative of variations in load and ambient temperature throughout the year, and calculated as the ratio between annual cooling demand and annual electricity consumption, expressed to two decimal places;
- (44) ‘annual cooling demand’ means the sum of each bin-specific cooling demand multiplied by the corresponding number of bin hours;
- (45) ‘bin-specific cooling demand’ means the rated cooling capacity multiplied by the part load ratio, for every bin in the year, expressed in kW to two decimal places;
- (46) ‘part load’ ( $Pc(T_j)$ ) means the cooling load at a specific ambient temperature  $T_j$ , calculated as the full load multiplied by the part load ratio corresponding to the same ambient temperature  $T_j$  and expressed in kW at two decimal places;

(47) 'part load ratio' ( $PR(T_j)$ ) at a specific ambient temperature  $T_j$  means:

- (a) for process chillers using an air-cooled condenser, the ambient temperature  $T_j$  minus 5 °C divided by the reference ambient temperature minus 5 °C, and multiplied by 0,2 and added to 0,8. For ambient temperatures higher than the reference ambient temperature, the part load ratio shall be 1. For ambient temperatures lower than 5 °C, the part load ratio shall be 0,8;
- (b) for process chillers using a water-cooled condenser, the water inlet temperature  $T_j$  minus 9 °C divided by the reference water inlet temperature (30 °C) minus 9 °C, and multiplied by 0,2 and added to 0,8. For ambient temperatures higher than the reference ambient temperature, the part load ratio shall be 1. For ambient temperatures lower than 5 °C (9 °C water inlet temperature at the condenser), the part load ratio shall be 0,8;

The part load ratio can be expressed at three decimal places or in percentage, after multiplying by 100, at one decimal place

(41) 'annual electricity consumption' is calculated as the sum of the ratios between each bin-specific cooling demand and the corresponding bin-specific energy efficiency ratio, multiplied by the corresponding number of bin hours;

(42) 'ambient temperature' means:

- (a) for process chillers using an air-cooled condenser, the air dry bulb temperature, expressed in degrees Celsius
- (b) for process chillers using a water-cooled condenser, the water inlet temperature at the condenser, expressed in degrees Celsius;

(43) 'bin' ( $bin_j$ ) means a combination of an ambient temperature  $T_j$  and bin hours  $h_j$ , as set out in Annex VIII;

(44) 'bin hours' ( $h_j$ ) means the hours per year at which an ambient temperature occurs for each bin, as set out in Annex VIII;

(45) 'reference ambient temperature' means the ambient temperature, expressed in degrees Celsius, at which the part load ratio is equal to 1. It shall be set at 35 °C. For air-cooled process chillers, the air inlet temperature to the condenser is then defined as 35 °C

while for water-cooled process chillers the water inlet temperature to the condenser is defined as 30 °C;

- (46) 'bin-specific energy efficiency ratio' ( $EER_j$ ) means the energy efficiency ratio for every bin in the year, derived from the part load, the declared cooling demand and declared energy efficiency ratio for specified bins, and calculated for other bins by linear interpolation, corrected where necessary by the degradation coefficient;
- (47) 'declared cooling demand' means the cooling demand at a limited number of specified bins, and calculated as the rated cooling capacity multiplied by the corresponding part load ratio;
- (48) 'declared energy efficiency ratio' means the energy efficiency ratio at a limited number of specified bins;
- (49) 'declared power input' means the electrical power input needed by the process chiller to meet the declared cooling capacity;
- (50) 'declared cooling capacity' means the cooling capacity delivered by the chiller to meet the declared cooling demand;
- (51) 'degradation coefficient' ( $C_c$ ) means the measure of efficiency loss due to cycling of process chillers at part load; if  $C_c$  is not determined by measurement, then the default degradation coefficient is  $C_c = 0,9$ ;
- (52) 'capacity control' means the ability of a process chiller to change its capacity by changing the volumetric flow rate of the refrigerant, to be indicated as 'fixed' if the process chiller cannot change its volumetric flow rate, 'staged' if the volumetric flow rate is changed or varied in series of not more than two steps, or 'variable' if the volumetric flow rate is changed or varied in series of three or more steps;

**Common definitions:**

- (53) 'global warming potential' (GWP) means the measure of how much 1 kg of the refrigerant applied in the vapour compression cycle is estimated to contribute to global warming, expressed in kg CO<sub>2</sub> equivalents over a 100-year time horizon;

- (54) for fluorinated refrigerants, the GWP values shall be those published in the Sixth Assessment Report adopted by the Intergovernmental Panel on Climate Change <sup>(1)</sup> (2021 IPCC GWP values for a 100-year period);
- (55) for non-fluorinated gases, the GWP values are those published in the first IPCC assessment over a 100-year period;
- (56) GWP values for mixtures of refrigerants shall be based on the formula stated in Annex I to Regulation (EU) No 517/2014, with the values of the Sixth Assessment Report adopted by the Intergovernmental Panel on Climate Change (2021 IPCC GWP values for a 100-year period);
- (57) for refrigerants not included in the above references, the Report of the 2018 Assessment of the Scientific Assessment Panel <sup>(2)</sup> (SAP) under the Montreal Protocol and the UNEP 2018 report on Refrigeration, Air Conditioning and Heat Pumps <sup>(3)</sup>, or newer if available before the date of entry into force, shall be used as references.

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<sup>1</sup> IPCC Sixth Assessment Report 2021, Report of the Intergovernmental Panel on Climate Change:  
<https://www.ipcc.ch/report/ar6/wg1/>

<sup>2</sup> <https://ozone.unep.org/sites/default/files/2019-05/SAP-2018-Assessment-report.pdf>

<sup>3</sup> [https://ozone.unep.org/sites/default/files/2019-04/RTOC-assessment-report-2018\\_0.pdf](https://ozone.unep.org/sites/default/files/2019-04/RTOC-assessment-report-2018_0.pdf)

## ANNEX II

### Ecodesign requirements for professional refrigerated storage cabinets

#### 1. REQUIREMENTS FOR ENERGY EFFICIENCY

- (a) Professional refrigerated storage cabinets within the scope of this Regulation, with the exception of refrigerator-freezers, shall comply with the following energy efficiency index (EEI) limits:
- (i) From 1 July 2024:  $EEI < 140$
  - (ii) From 1 July 2025:  $EEI < 120$
  - (iii) From 1 July 2027:  $EEI < 100$

The EEI of a professional refrigerated storage cabinet shall be calculated in accordance with the procedure described in Annex III.

#### 2. RESOURCE EFFICIENCY REQUIREMENTS

From 1 January 2026, the following requirements shall be met:

- (a) Availability of spare parts
- (1) Manufacturers, importers or authorised representatives of professional, scientific and healthcare refrigerated storage cabinets and blast cabinets shall make available to professional repairers at least the following spare parts:
- thermostats;
  - starting relays;
  - no-frost heating resistors;
  - temperature sensors;
  - software and firmware including reset software;
  - printed circuit boards; and

— light sources;

for a minimum period of eight years after placing the last unit of the model on the market.

- (2) Manufacturers, importers or authorised representatives of professional, scientific and healthcare refrigerated storage cabinets and blast cabinets shall make available to professional repairers and end-users at least the following spare parts:

— door handles and door hinges;

— knobs, dials and buttons;

— door gaskets; and

— peripheral trays, baskets and racks for storage;

for a minimum period of eight years after placing the last unit of the model on the market.

- (3) Manufacturers, importers or authorised representatives of professional, scientific and healthcare refrigerated storage cabinets and blast cabinets shall ensure that the spare parts mentioned in points (1) and (2) can be replaced with the use of commonly available tools and without permanent damage to the appliance.

- (4) The list of spare parts concerned by point (1) and the procedure for ordering them shall be publicly available on the free access website of the manufacturer, importer or authorised representative, at the latest two years after the placing on the market of the first unit of a model and until the end of the period of availability of these spare parts.

- (5) The list of spare parts concerned by point (2) and the procedure for ordering them and the repair instructions shall be publicly available on the manufacturer's, the importer's or authorised representative's free access website, at the moment of the placing on the market of the first unit of a model and until the end of the period of availability of these spare parts.

- (b) Maximum delivery time of spare parts

During the period mentioned under point (a), the manufacturer, importer or authorised representatives shall ensure the delivery of the spare parts for professional, scientific and healthcare refrigerated storage cabinets and blast cabinets within 15 working days after having received the order.

In the case of spare parts available concerned by point a(1) the availability of the spare parts may be limited to professional repairers registered in accordance with point c(1) and (2).

(c) Access to repair and maintenance information

After a period of two years after the placing on the market of the first unit of a model or of an equivalent model, and until the end of the period mentioned under (a), the manufacturer, importer or authorised representative shall provide access to the appliance repair and maintenance information to professional repairers in the following conditions:

- (1) the manufacturer's, importer's or authorised representative's website shall indicate the process for professional repairers to register for access to information; to accept such a request, manufacturers, importers or authorised representative may require the professional repairer to demonstrate that:
  - (i) the professional repairer has the technical competence to repair professional, scientific or healthcare refrigerated storage cabinets or blast cabinets and complies with the applicable regulations for repairers of electrical equipment in the Member States where it operates. Reference to an official registration system as professional repairer, where such system exists in the Member States concerned, shall be accepted as proof of compliance with this point;
  - (ii) the professional repairer is covered by insurance covering liabilities resulting from its activity regardless of whether this is required by the Member State.
- (2) the manufacturers, importers or authorised representatives shall accept or refuse the registration within 5 working days from the date of the request;
- (3) manufacturers, importers or authorised representatives may charge reasonable and proportionate fees for access to the repair and maintenance information or for receiving regular updates. A fee is reasonable if it does not discourage access by failing to take into account the extent to which the professional repairer uses the information.

Once registered, a professional repairer shall have access, within one working day after requesting it, to the requested repair and maintenance information. The information may be provided for an equivalent model or model of the same family, if relevant.

The available repair and maintenance information shall include:

- the unequivocal appliance identification;
- a disassembly map or exploded view;
- technical manual of instructions for repair;
- list of necessary repair and test equipment;
- component and diagnosis information (such as minimum and maximum theoretical values for measurements);
- wiring and connection diagrams;
- diagnostic fault and error codes (including manufacturer-specific codes, where applicable);
- instructions for installation of relevant software and firmware including reset software; and
- information on how to access data records of reported failure incidents stored on the professional refrigerated storage cabinets (where applicable).

(d) Requirements for dismantling for material recovery and recycling while avoiding pollution:

- (1) Manufacturers, importers or authorised representatives shall ensure that professional, scientific and healthcare refrigerated storage cabinets and blast cabinets are designed in such a way that the materials and components referred to in Annex VII to Directive 2012/19/EU can be removed with the use of commonly available tools.
- (2) Manufacturers, importers and authorised representatives shall fulfil the obligations laid down in point 1 of Article 15 of Directive 2012/19/EU.
- (3) If the professional, scientific and healthcare refrigerated storage cabinets and blast cabinets contain vacuum insulation panels, the cabinets shall be labelled with the letters 'VIP'.

### 3. REQUIREMENTS FOR PRODUCT INFORMATION



- (a) One year after entry into force, the following product information on professional refrigerated storage cabinets shall be provided, in the instruction booklet for installers and end-users, and in the free access websites of manufacturers, their authorised representatives and importers:
- (i) the category of the appliance, namely whether it is vertical or counter;
  - (ii) where applicable, whether the cabinet is heavy-duty, light-duty or refrigerator-freezer;
  - (iii) the intended operating temperature(s) of the cabinet — chilled, frozen or multi-use;
  - (iv) the net volume of each compartment, expressed in litres and rounded to one decimal place;
  - (v) the annual energy consumption of the cabinet, expressed in kWh per year;
  - (vi) the energy efficiency index of the cabinet, except for refrigerator-freezers, where the indicative daily energy consumption shall be declared, by testing the compartments exclusively intended for chilled operating temperature, at chilled operating temperature, and the ones exclusively intended for frozen operating temperature, at frozen operating temperature;
  - (vii) for light-duty cabinets, it shall be indicated that ‘This appliance is intended for use in ambient temperatures up to 25 °C and therefore is not suitable for use in hot professional kitchens’;
  - (viii) for normal duty cabinets, it shall be indicated that ‘This appliance is intended for use in ambient temperatures up to 30 °C’;
  - (ix) for heavy-duty cabinets, it shall be indicated that ‘This appliance is intended for use in ambient temperatures up to 40 °C’;
  - (x) any specific precautions which are to be taken when the cabinet is used and maintained in order to optimise its energy efficiency;
  - (xi) the type, name and global warming potential (GWP) of the refrigerant fluid contained in the cabinet;

- (xii) the refrigerant charge, expressed in kg and rounded to two decimal places;
  - (xiii) information relevant for recycling or disposal at end-of-life.
  - (xiv) access to professional repair such as internet webpages, addresses, contact details;
  - (xv) relevant information for ordering spare parts, directly or through other channels provided by the manufacturer, importer or authorised representative such as internet webpages, addresses, contact details;
  - (xvi) the minimum period during which spare parts, necessary for the repair of the professional refrigerated storage cabinet, are available;
  - (xvii) the minimum duration of the guarantee of the professional refrigerated storage cabinet offered by the manufacturer, importer or authorised representative;
  - (xviii) instructions on how to find the model information in the product database, as set out in Delegated Regulation (EU) 20YY/XXX [EL professional refrigeration products] by means of a weblink that links the model information as stored in the product database or a link to the product database and information on how to find the model identifier on the product.
- (b) One year after entry into force, for professional refrigerated storage cabinets a section of the free access websites of manufacturers for installers and other professionals, their authorised representatives, or importers shall be provided, containing information relevant for:
- (i) installation in order to optimise energy efficiency of the appliances;
  - (ii) non-destructive disassembly for maintenance purposes;
  - (iii) disassembly and dismantling for disposal at end-of life.
- (c) The technical documentation for the purposes of conformity assessment pursuant to Article 4 shall contain the following elements:
- (i) elements specified in point (a);

- (ii) where the information included in the technical documentation file for a particular model has been obtained by calculation on the basis of design, or extrapolation from other equivalent refrigerating appliances, or both, the documentation shall include details of such calculations or extrapolations, or both, and of tests undertaken by suppliers to verify the accuracy of the calculations undertaken. The information shall also include a list of all other equivalent models where the information was obtained on the same basis;
- (iii) the information contained in this technical documentation may be merged with the technical documentation provided in accordance with measures under Regulation (EU) 2017/1369 of the European Parliament and of the Council <sup>(4)</sup>.

Table 1 below provides an indicative layout for the requested information.

*Table 1*

**Information requirements for professional refrigerated storage cabinets**

Model(s): [information identifying the model(s) to which the information relates]			
Intended use	<b>storage</b>		
Operating temperature(s)	chilled/frozen/multi-use		
Category	Vertical/counter		
(where applicable) Heavy-duty/light-duty			
Refrigerant fluid(s): [information to identify the refrigerant fluid(s), including GWP]			
<b>Item</b>	<b>Symbol</b>	<b>Value</b>	<b>Unit</b>
<b>Annual Energy Consumption</b>	<i>AEC</i>	x,xx	kWh
<b>Energy Efficiency Index</b>	<i>EI</i>	x,xx	
<b>Net volume</b>	<i>V<sub>N</sub></i>	x,x	<b>litre</b>

<sup>4</sup> Regulation (EU) 2017/1369 of the European Parliament and of the Council of 4 July 2017 setting a framework for energy labelling and repealing Directive 2010/30/EU (OJ L 198, 28.7.2017, p. 1–23).

(where applicable)			
Chilled volume	$V_{NRef}$	x,x	litre
Frozen volume	$V_{NFrz}$	x,x	litre
Refrigerant charge		x,xx	kg
Contact details	Name and address of the manufacturer or its authorised representative.		

[Table to be updated once draft has been agreed.]

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### ANNEX III

#### Method for calculating the energy efficiency index for professional refrigerated storage cabinets

For the calculation of the energy efficiency index (EEI) of a professional refrigerated storage cabinet model, the annual energy consumption of the cabinet is compared to its standard annual energy consumption.

The EEI is calculated as:

$$EEI = (AEC/SAEC) \times 100$$

Where:

$$AEC = E_{24h} \times af \times 365$$

AEC = annual energy consumption of the cabinet in kWh/year

E<sub>24h</sub> = energy consumption of the cabinet over 24 hours

*af* = *adjustment factor* to be applied only for light-duty cabinets, according to Annex IV, point 2(b)

$$SAEC = M \times V_n + N$$

SAEC = standard annual energy consumption of the cabinet in kWh/year

V<sub>n</sub> = net volume of the appliance, which is the sum of net volumes of all compartments of the cabinet, expressed in litres.

M and N are given in the Table 2.

Table 2

### M and N coefficient values

Category	Value for M	Value for N
Vertical Chilled	0,950	370
Vertical Frozen	3,370	1074
Counter Chilled	1,330	666
Counter Frozen	6,400	1357

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## ANNEX IV

### Measurements and calculations for professional refrigerated storage cabinets

1. For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards the reference numbers of which have been published for that purpose in the *Official Journal of the European Union*, or using other reliable, accurate and reproducible methods that take into account the generally recognised state-of-the-art methods and are in line with the provisions set out below.
2. In the absence of relevant standards and until the publication of the references of the relevant harmonised standards in the Official Journal, the transitional testing methods set out in Annex XII or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art, shall be used.
3. For establishing the values of annual energy consumption and energy efficiency index for professional refrigerated storage cabinets, measurements shall be made under the following conditions:
  - (a) The temperature of test packages shall be between  $-1\text{ °C}$  and  $5\text{ °C}$  for chilled cabinets and lower than  $-15\text{ °C}$  for frozen cabinets;
  - (b) The ambient conditions shall correspond to climate class 4 as detailed in Table 3, except for light-duty cabinets which shall be tested in ambient conditions corresponding to climate class 3. Adjustment factors of 1,2 for light-duty cabinets at chilled operating temperature and 1,1 for light-duty cabinets at frozen operating temperature should then be applied to the testing results thus obtained for light-duty cabinets for the purpose of information declaration according to Annex II, point 2(a);
  - (c) Professional refrigerated storage cabinets shall be tested:
    - at chilled operating temperature in the case of a combined cabinet containing at least one compartment exclusively intended for chilled operating temperature;
    - at chilled operating temperature in the case of a professional refrigerated storage cabinet which has solely one compartment exclusively intended for chilled operating temperature;

— at frozen operating temperature in all other cases.

4. The ambient conditions of climate classes 3, 4 and 5 are shown in Table 3.

*Table 3*

**Ambient conditions of climate classes 3, 4 and 5**

Test room climate class	Dry bulb temperature, °C	Relative humidity %	Dew point, °C	Water vapour mass in dry air, g/kg
3	25	60	16,7	12,0
4	30	55	20,0	14,8
5	40	40	23,9	18,8



## Ecodesign requirements for scientific and healthcare refrigerated storage cabinets

### 1. RESOURCE EFFICIENCY REQUIREMENTS

The resource efficiency requirements of Annex II.2 shall also apply to scientific and healthcare refrigerated storage cabinets.

### 2. REQUIREMENTS FOR PRODUCT INFORMATION

- (a) One year after entry into force, the following product information on scientific and healthcare refrigerated storage cabinets shall be provided, in the instruction booklet for installers and end-users, and in the free access websites of manufacturers, their authorised representatives and importers:
- (i) the category of the appliance;
  - (ii) the intended operating temperature(s) of the cabinet;
  - (iii) the net volume of each compartment, expressed in litres and rounded to one decimal place;
  - (iv) the annual energy consumption of the cabinet, expressed in kWh per year;
  - (v) any specific precautions which are to be taken when the cabinet is used and maintained in order to optimise its energy efficiency;
  - (vi) the type, name and global warming potential (GWP) of the refrigerant fluid contained in the cabinet;
  - (vii) the refrigerant charge, expressed in kg and rounded to two decimal places;
  - (viii) information relevant for recycling or disposal at end-of-life.

- (ix) access to professional repair such as internet webpages, addresses, contact details;
  - (x) relevant information for ordering spare parts, directly or through other channels provided by the manufacturer, importer or authorised representative such as internet webpages, addresses, contact details;
  - (xi) the minimum period during which spare parts, necessary for the repair of the scientific and healthcare refrigerated storage cabinet, are available;
  - (xii) the minimum duration of the guarantee of the scientific and healthcare refrigerated storage cabinet offered by the manufacturer, importer or authorised representative;
  - (xiii) instructions on how to find the model information in the product database, as set out in Delegated Regulation (EU) 20YY/XXX [EL professional refrigeration products] by means of a weblink that links the model information as stored in the product database or a link to the product database and information on how to find the model identifier on the product.
- (b) One year after entry into force, for scientific and healthcare refrigerated storage cabinets a section of the free access websites of manufacturers for installers and other professionals, their authorised representatives, or importers shall be provided, containing information relevant for:
- (i) installation in order to optimise energy efficiency of the appliances;
  - (ii) non-destructive disassembly for maintenance purposes;
  - (iii) disassembly and dismantling for disposal at end-of life.
- (c) The technical documentation for the purposes of conformity assessment pursuant to Article 4 shall contain the following elements:
- (i) elements specified in point (a);
  - (ii) where the information included in the technical documentation file for a particular model has been obtained by calculation on the basis of design, or extrapolation from other equivalent refrigerating appliances, or both, the documentation shall include details of such calculations or extrapolations, or both, and of tests undertaken by suppliers to verify the accuracy of the calculations undertaken. The

information shall also include a list of all other equivalent models where the information was obtained on the same basis;

- (iii) the information contained in this technical documentation may be merged with the technical documentation provided in accordance with measures under Regulation (EU) 2017/1369 of the European Parliament and of the Council.

Table 4 below provides an indicative layout for the requested information.

*Table 4*

**Information requirements for scientific and healthcare refrigerated storage cabinets**

[Table to be completed once draft has been agreed.]

## ANNEX VI

### Ecodesign requirements for blast cabinets

#### 1. REQUIREMENTS FOR ENERGY EFFICIENCY

- (a) From 1 January 2026, blast cabinets within the scope of this Regulation shall comply with the following minimum energy performance requirements:

Reference temperature of the blast cycle	Maximum energy consumption, in kWh per kg of foodstuff per cycle
Chilling	0,120
Freezing	0,60

- (b) From 1 January 2028, blast cabinets within the scope of this Regulation shall comply with the following minimum energy performance requirements:

Reference temperature of the blast cycle	Maximum energy consumption, in kWh per kg of foodstuff per cycle
Chilling	0,095
Freezing	0,40

- (c) Multi-use blast cabinets capable of performing both blast chilling cycles and blast freezing cycles shall comply with the requirements of each category for which they are declared.

#### 2. RESOURCE EFFICIENCY REQUIREMENTS

The resource efficiency requirements of Annex II.2 shall also apply to blast cabinets.

### 3. REQUIREMENTS FOR PRODUCT INFORMATION

- (a) **One year after entry into force**, the following indicative product information on blast cabinets shall be provided in the instruction booklet for installers and end-users, and in the free access websites of manufacturers, their authorised representatives and importers:
- (i) Full load capacity of the cabinet expressed in kg of foodstuffs, and rounded to two decimal places;
  - (ii) The standard temperature of the blast chilling cycle, and where applicable the blast freezing cycle, meaning from which temperature in °C down to which temperature in °C foodstuffs are intended to be cooled and in how many minutes;
  - (iii) The energy consumption, in kWh per kg of foodstuffs per standard temperature cycle and rounded to three decimal places;
  - (iv) In the case of integral equipment, type, name and GWP of the refrigerant fluid contained in the cabinet and refrigerant charge (in kg) rounded to two decimal places. In the case of equipment designed to be used with a remote condensing unit (not supplied with the blast cabinet itself), the intended refrigerant charge when used with a recommended condensing unit and the intended refrigerant fluid type, name and GWP;
  - (v) information relevant for recycling or disposal at end-of-life.
  - (vi) access to professional repair such as internet webpages, addresses, contact details;
  - (vii) relevant information for ordering spare parts, directly or through other channels provided by the manufacturer, importer or authorised representative such as internet webpages, addresses, contact details;
  - (viii) the minimum period during which spare parts, necessary for the repair of the blast cabinet, are available;
  - (ix) the minimum duration of the guarantee of the blast cabinet offered by the manufacturer, importer or authorised representative;
- (b) One year after entry into force, for scientific and healthcare refrigerated storage cabinets a section of the free access websites of manufacturers for installers and

other professionals, their authorised representatives, or importers shall be provided, containing information relevant for:

- (iv) installation in order to optimise energy efficiency of the appliances;
  - (v) non-destructive disassembly for maintenance purposes;
  - (vi) disassembly and dismantling for disposal at end-of life.
- (c) The technical documentation for the purposes of conformity assessment pursuant to Article 4 shall contain the following elements:
- (i) elements specified in point (a);
  - (ii) where the information included in the technical documentation file for a particular model has been obtained by calculation on the basis of design, or extrapolation from other equivalent refrigerating appliances, or both, the documentation shall include details of such calculations or extrapolations, or both, and of tests undertaken by suppliers to verify the accuracy of the calculations undertaken. The information shall also include a list of all other equivalent models where the information was obtained on the same basis.

Table 5 below provides an indicative layout for the requested information.

*Table 5*

**Information requirements for blast cabinets**

[Table to be completed once draft has been agreed.]

## *ANNEX VII*

### **Measurements and calculations for blast cabinets**

1. For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards the reference numbers of which have been published for that purpose in the Official Journal of the European Union, or using other reliable, accurate and reproducible methods that take into account the generally recognised state-of-the-art methods and are in line with the provisions set out below.
2. In the absence of relevant standards and until the publication of the references of the relevant harmonised standards in the Official Journal, the transitional testing methods set out in Annex XII or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art, shall be used.
3. For establishing the energy consumption in kWh per kg of foodstuff per cycle, measurements shall be made under the following conditions:
  - (a) the ambient conditions shall correspond to climate class 4 as detailed in Table 3;
  - (b) the test food temperature in all the pans forming the full load shall be 65 °C;

*ANNEX VIII*

**Ecodesign requirements for condensing units**

1. REQUIREMENTS FOR ENERGY EFFICIENCY

- (a) From 1 January 2026, the coefficient of performance (COP) and the seasonal energy performance ratio (SEPR) of condensing units shall not fall below the following values:

Operating temperature	Rated capacity $P_A$	Applicable ratio	Value
Medium	$0,2 \text{ kW} < P_A \leq 5 \text{ kW}$	COP	$1,525 + 0,09 C$
	$5 \text{ kW} < P_A \leq 50 \text{ kW}$	SEPR	$3,05 - 0,012 C$
Low	$0,1 \text{ kW} < P_A \leq 2 \text{ kW}$	COP	$0,87 + 0,14 C$
	$2 \text{ kW} < P_A \leq 20 \text{ kW}$	SEPR	$1,67 + 0,005 C$

Where C is the rated cooling capacity.

- (b) From 1 January 2028, the coefficient of performance (COP) and the seasonal energy performance ratio (SEPR) of condensing units shall not fall below the following values:

Operating temperature	Rated capacity $P_A$	Applicable ratio	Value
Medium	$0,2 \text{ kW} < P_A \leq 5 \text{ kW}$	COP	$1,65 + 0,09 C$
	$5 \text{ kW} < P_A \leq 50 \text{ kW}$	SEPR	$3,35 - 0,012 C$
Low	$0,1 \text{ kW} < P_A \leq 2 \text{ kW}$	COP	$0,94 + 0,14 C$



$2 \text{ kW} < P_A \leq 20 \text{ kW}$	SEPR	$1,74 + 0,005 C C$

Where C is the rated cooling capacity.

- (c) Condensing units capable of operating both at medium and low temperature shall comply with the requirements of each category for which they are declared.

## 2. RESOURCE EFFICIENCY REQUIREMENTS

TBD

## 3. REQUIREMENTS FOR PRODUCT INFORMATION

**One year after entry into force**, the following product information on condensing units shall be provided:

- (a) the instruction manuals for installers and end-users, and free access websites of manufacturers, their authorised representatives and importers, shall contain the following elements:
- (i) intended evaporating temperature, expressed in degrees Celsius (medium temperature – 10 °C, low temperature – 35 °C);
  - (ii) for condensing units with a rated cooling capacity lower than 5 kW for medium operating temperatures and 2 kW for low operating temperatures:
    - the rated COP, at full load and 32 °C ambient temperature, rounded to two decimal places, and rated cooling capacity and power input, expressed in kW and rounded to two decimal places;

- the COP value, at full load and 25 °C ambient temperature, rounded to two decimal places, and corresponding cooling capacity and power input, expressed in kW and rounded to two decimal places;
- (iii) for condensing units with a rated cooling capacity higher than 5 kW for medium operating temperatures and 2 kW for low operating temperatures:
- the SEPR value, rounded to two decimal places;
  - the annual electricity consumption, expressed in kWh per year;
  - the rated cooling capacity, rated power input and rated COP;
  - the declared cooling capacity and declared power input, expressed in kW and rounded to three decimal places, and the COP value, rounded to two decimal places, at rating points B, C and D;
- (iv) for condensing units intended for use at ambient temperature above 35 °C, the COP value, at full load and 43 °C ambient temperature, rounded to two decimal places, and corresponding cooling capacity and power input, expressed in kW and rounded to two decimal places;
- (v) the type(s) and name(s) of refrigerant fluid(s) intended to be used with the condensing unit;
- (vi) any specific precautions that are to be taken when the condensing unit is maintained;
- (vii) any specific precautions that are to be taken to optimise the efficiency of the condensing unit when it is integrated into a refrigerating appliance;
- (viii) information relevant for recycling or disposal at end-of-life.
- (b) a section of the free access websites of manufacturers for installers and other professionals, their authorised representatives, or importers shall be provided, containing information relevant for:
- (i) installation in order to optimise energy efficiency of the appliances;

- (ii) non-destructive disassembly for maintenance purposes;
  - (iii) disassembly and dismantling for disposal at end-of life.
- (c) the technical documentation for the purposes of conformity assessment pursuant to Article 4 shall contain the following elements:
- (i) the elements specified in point (a);
  - (ii) where the information relating to a specific model has been obtained by calculation on the basis of design or extrapolation from other combinations, the details of such calculations or extrapolations, and of any tests undertaken to verify the accuracy of the calculations, including details of the mathematical model for calculating the performance of such combinations and details of the measurements taken to verify that model.

Tables 6 and 7 below provide an indicative layout for the requested information.

*Table 6*

**Information requirements for condensing units with a rated cooling capacity lower than 5 kW for medium operating temperatures and 2 kW for low operating temperatures**

Model(s): [information identifying the model(s) to which the information relates]				
Refrigerant fluid(s): [information to identify the refrigerant fluid(s) intended to be used with the condensing unit]				
Item	Symbol	Value		Unit
Evaporating temperature (*)	$t$	- 10 °C	- 35 °C	°C
<b>Parameters at full load and ambient temperature 32 °C</b>				
Rated cooling capacity	$P_A$	x,xxx	x,xxx	kW
Rated power input	$D_A$	x,xxx	x,xxx	kW

<b>Rated COP</b>	$COP_A$	x,xx	x,xx	
<b>Parameters at full load and ambient temperature 25 °C</b>				
Cooling capacity	$P_2$	x,xxx	x,xxx	kW
Power input	$D_2$	x,xxx	x,xxx	kW
<b>COP</b>	$COP_2$	x,xx	x,xx	
<b>Parameters at full load and ambient temperature 43 °C (where applicable)</b>				
Cooling capacity	$P_3$	x,xxx	x,xxx	kW
Power input	$D_3$	x,xxx	x,xxx	kW
<b>COP</b>	$COP_3$	x,xx	x,xx	
<b>Other items</b>				
Capacity control	fixed/step/variable			
Contact details	Name and address of the manufacturer or its authorised representative.			
(*) For condensing units intended to operate at only one evaporating temperature, one of the two columns related to 'Value' can be deleted.				

Table 7

**Information requirements for condensing units with a rated cooling capacity higher than 5 kW for medium operating temperatures and 2 kW for low operating temperatures**

Model(s): [information identifying the model(s) to which the information relates]			
Refrigerant fluid(s): [information to identify the refrigerant fluid(s) intended to be used with the condensing unit]			
<b>Item</b>	<b>Symbol</b>	<b>Value</b>	<b>Unit</b>

Evaporating temperature (*)	$t$	- 10 °C	- 35 °C	°C
Annual electricity consumption	$Q$	x	x	kWh/a
Seasonal energy performance ratio	$SEPR$	x,xx	x,xx	
<b>Parameters at full load and ambient temperature 32 °C</b>				
<b>(point (A))</b>				
Rated cooling capacity	$P_A$	x,xx	x,xx	kW
Rated power input	$D_A$	x,xx	x,xx	kW
Rated COP	$COP_A$	x,xx	x,xx	
<b>Parameters at part load and ambient temperature 25 °C</b>				
<b>(point (B))</b>				
Declared cooling capacity	$P_B$	x,xx	x,xx	kW
Declared power input	$D_B$	x,xx	x,xx	kW
Declared COP	$COP_B$	x,xx	x,xx	
<b>Parameters at part load and ambient temperature 15 °C</b>				
<b>(point (C))</b>				
Declared cooling capacity	$P_c$	x,xx	x,xx	kW
Declared power input	$D_c$	x,xx	x,xx	kW
Declared COP	$COP_C$	x,xx	x,xx	
<b>Parameters at part load and ambient temperature 5 °C</b>				
<b>(point (D))</b>				
Declared cooling capacity	$P_D$	x,xx	x,xx	kW
Declared power input	$D_D$	x,xx	x,xx	kW
Declared COP	$COP_D$	x,xx	x,xx	
<b>Parameters at full load and ambient temperature 43 °C</b>				
<b>(where applicable)</b>				
Cooling capacity	$P_3$	x,xx	x,xx	kW

Power input	$D_3$	x,xx	x,xx	kW
<b>Declared COP</b>	<b><math>COP_3</math></b>	<b>x,xx</b>	<b>x,xx</b>	
<b>Other items</b>				
Capacity control	fixed/step/variable			
Degradation coefficient for fixed and staged capacity units	$Cdc$	0,25		
Contact details	Name and address of the manufacturer or its authorised representative.			
(*) For condensing units intended to operate at only one evaporating temperature, one of the two columns related to 'Value' can be deleted.				

## ANNEX IX

### Measurements and calculations for condensing units

1. For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards the reference numbers of which have been published for that purpose in the Official Journal of the European Union, or using other reliable, accurate and reproducible methods that take into account the generally recognised state-of-the-art methods and are in line with the provisions set out below.
2. In the absence of relevant standards and until the publication of the references of the relevant harmonised standards in the Official Journal, the transitional testing methods set out in Annex XII or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art, shall be used.
3. For establishing the values of cooling capacity, power input, coefficient of performance and seasonal energy performance ratio, measurements shall be made under the following conditions:
  - (a) the reference ambient temperature at the outdoor heat exchanger (condenser) shall be 32 °C;
  - (b) the saturated evaporating temperature at the indoor heat exchanger (evaporator) shall be – 35 °C for low temperature and – 10 °C for medium temperature;
  - (c) where applicable, the variations of ambient temperature throughout the year, representative of average climate conditions in the Union, and the corresponding number of hours when these temperatures occur, shall be as set out in Table 8;
  - (d) where applicable, the effect of the degradation of energy efficiency caused by cycling, depending on the type of capacity control of the condensing unit, shall be taken into account.

Table 8

**Variations of outdoor temperatures across the year under average climate conditions in Europe for condensing units**

j	T <sub>j</sub>	h <sub>j</sub>	j	T <sub>j</sub>	h <sub>j</sub>	j	T <sub>j</sub>	h <sub>j</sub>
1	- 19	0,08	21	1	282,01	41	21	196,31
2	- 18	0,41	22	2	275,91	42	22	163,04
3	- 17	0,65	23	3	300,61	43	23	141,78
4	- 16	1,05	24	4	310,77	44	24	121,93
5	- 15	1,74	25	5	336,48	45	25	104,46
6	- 14	2,98	26	6	350,48	46	26	85,77
7	- 13	3,79	27	7	363,49	47	27	71,54
8	- 12	5,69	28	8	368,91	48	28	56,57
9	- 11	8,94	29	9	371,63	49	29	43,35
10	- 10	11,81	30	10	377,32	50	30	31,02
11	- 9	17,29	31	11	376,53	51	31	20,21
12	- 8	20,02	32	12	386,42	52	32	11,85
13	- 7	28,73	33	13	389,84	53	33	8,17
14	- 6	39,71	34	14	384,45	54	34	3,83
15	- 5	56,61	35	15	370,45	55	35	2,09
16	- 4	76,36	36	16	344,96	56	36	1,21
17	- 3	106,07	37	17	328,02	57	37	0,52
18	- 2	153,22	38	18	305,36	58	38	0,40
19	- 1	203,41	39	19	261,87			
20	0	247,98	40	20	223,90			



## Ecodesign requirements for process chillers

### 1. REQUIREMENTS FOR ENERGY EFFICIENCY

- (a) From 1 January 2027, the seasonal energy performance ratio (SEPR) of process chillers shall not fall below the following values:

Heat transfer medium at the condensing side	Operating temperature	Rated cooling capacity	Minimum
Air	Medium	$P_A < 100 \text{ kW}$	2,80
		$100 \leq P_A < 300 \text{ kW}$	3,50
		$P_A > 300 \text{ kW}$	3,80
	Low	$P_A \leq 200 \text{ kW}$	1,87
		$P_A > 200 \text{ kW}$	2,02
Water	Medium	$P_A \leq 300 \text{ kW}$	4,00
		$P_A > 300 \text{ kW}$	5,00
	Low	$P_A \leq 200 \text{ kW}$	2,50
		$P_A > 200 \text{ kW}$	2,90

### 2. RESOURCE EFFICIENCY REQUIREMENTS

TBD

### 3. REQUIREMENTS FOR PRODUCT INFORMATION

From 1 July 2027, the following product information on process chillers shall be provided:

- (b) the instruction manuals for installers and end-users, and free access websites of manufacturers, their authorised representatives and importers, shall contain the following elements:

- (i) intended operating temperature, expressed in degrees Celsius (medium temperature – 8 °C, low temperature – 25 °C);
  - (ii) the type of process chiller, either air-cooled or water-cooled;
  - (iii) the rated cooling capacity, rated power input, expressed in kW and rounded to two decimal places;
  - (iv) the rated energy efficiency ratio ( $EER_A$ ), rounded to two decimal places;
  - (v) declared cooling capacity and declared power input at rating points B, C and D, expressed in kW and rounded to two decimal places;
  - (vi) declared EER at rating points B, C, and D, rounded to two decimal places;
  - (vii) the SEPR value, rounded to two decimal places;
  - (viii) the annual electricity consumption, in kWh per year;
  - (ix) type(s) and name(s) of refrigerant fluid(s) intended to be used with the process chiller;
  - (x) any specific precautions that are to be taken when the process chiller is maintained;
  - (xi) information relevant for recycling or disposal at end-of-life;
- (c) a section of the free access websites of manufacturers for installers and other professionals, their authorised representatives, or importers shall be provided, containing information relevant for:
- (ii) installation in order to optimise energy efficiency of the appliances;
  - (iii) non-destructive disassembly for maintenance purposes;
  - (iv) disassembly and dismantling for disposal at end-of life;

- (d) the technical documentation for the purposes of conformity assessment pursuant to Article 4 shall contain the following elements:
- (i) the elements specified in point (a);
  - (ii) where the information relating to a specific model has been obtained by calculation on the basis of design or extrapolation from other combinations, the details of such calculations or extrapolations, and of any tests undertaken to verify the accuracy of the calculations, including details of the mathematical model for calculating the performance of such combinations and details of the measurements taken to verify that model.

Table 9 below provides an indicative layout for the requested information.

Table 9

**Information requirements for process chillers**

Model(s): [information identifying the model(s) to which the information relates]				
Type of condensing: [air-cooled/water-cooled]				
Refrigerant fluid(s): [information identifying the refrigerant fluid(s) intended to be used with the process chiller]				
Item	Symbol	Value		Unit
Operating temperature	$t$	- 8 °C	- 25 °C	°C
Seasonal Energy Performance Ratio	$SEPR$	x,xx	x,xx	
Annual electricity consumption	$Q$	x	x	kWh/a
<b>Parameters at full load and reference ambient temperature (point (A))</b>				
Rated cooling capacity	$P_A$	x,xx	x,xx	kW
Rated power input	$D_A$	x,xx	x,xx	kW

<b>Rated EER</b>	<b><math>EER_A</math></b>	<b>x,xx</b>	<b>x,xx</b>	
<b>Parameters at rating point B</b>				
Declared cooling capacity	$P_B$	x,xx	x,xx	kW
Declared power input	$D_B$	x,xx	x,xx	kW
<b>Declared EER</b>	<b><math>EER_B</math></b>	<b>x,xx</b>	<b>x,xx</b>	
<b>Parameters at rating point C</b>				
Declared cooling capacity	$P_c$	x,xx	x,xx	kW
Declared power input	$D_c$	x,xx	x,xx	kW
<b>Declared EER</b>	<b><math>EER_C</math></b>	<b>x,xx</b>	<b>x,xx</b>	
<b>Parameters at rating point D</b>				
Declared cooling capacity	$P_D$	x,xx	x,xx	kW
Declared power input	$D_D$	x,xx	x,xx	kW
<b>Declared EER</b>	<b><math>EER_D</math></b>	<b>x,xx</b>	<b>x,xx</b>	
<b>Other items</b>				
Capacity control		fixed/staged (**)/variable		
Degradation coefficient for fixed and staged capacity units (*)	$C_c$	x,xx	x,xx	
Contact details	Name and address of the manufacturer or its authorised representative.			
<p>(*) If <math>C_c</math> is not determined by measurement then the default degradation coefficient shall be <math>C_c = 0,9</math>. Where the default <math>C_c</math> value is chosen, then results from cycling tests shall not be required. Otherwise, the cooling cycling test value shall be required.</p> <p>(**) For staged capacity units, two values divided by a slash ('/') shall be declared in each box in the section referring to 'cooling capacity' and 'EER'.</p> <p>For process chillers intended to operate at only one operating temperature, one of the two columns related to 'Value' can be deleted.</p>				

### Measurements and calculations for process chillers

1. For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards the reference numbers of which have been published for that purpose in the Official Journal of the European Union, or using other reliable, accurate and reproducible methods that take into account the generally recognised state-of-the-art methods and are in line with the provisions set out below.
2. In the absence of relevant standards and until the publication of the references of the relevant harmonised standards in the Official Journal, the transitional testing methods set out in Annex XII or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art, shall be used.
3. For establishing the values of cooling capacity, power input, energy efficiency ratio and seasonal energy performance ratio, measurements shall be made under the following conditions:
  - (a) the reference ambient temperature at the outdoor heat exchanger shall be 35 °C for air-cooled chillers and 30 °C water inlet temperature at the condenser for water-cooled chillers;
  - (b) the outlet temperature of the liquid at the indoor heat exchanger shall be – 25 °C for low temperature and – 8 °C for medium temperature;
  - (c) the variations of ambient temperature throughout the year, representative of average climate conditions in the Union, and the corresponding number of hours when these temperatures occur, shall be as set out in Table 6 in Annex IX;
  - (d) the effect of the degradation of energy efficiency caused by cycling depending on the type of capacity control of the process chiller shall be taken into account.

*ANNEX XII*

**Transitional Methods**

References and qualifying notes for professional, scientific and healthcare refrigerated storage cabinets, blast cabinets, condensing units and process chillers.

Parameter	Reference Test Method / Title	Notes
<b>Professional refrigerated storage cabinets</b>		
Net volume, Vn (litres)	ISO 22041:2019 Clause 6.1	Where applicable chilled or frozen.
Energy consumption over 24 hours (E24h)	ISO 22041:2019 Clause 5.3.5.2	
Climate class	ISO 22041:2019 Clause 5.3.5.3	
<b>Scientific and healthcare refrigerated storage cabinets</b>		
Energy Efficiency Index (EEI)		
Net volume, Vn (litres)	DIN 13277 Clause 5.4	
Declared reference temperature for AEC measurement		Climate class/ ambient temperature
Energy consumption over 24 hours (E24h)	DIN 13277 Clause 5.12	
<b>Blast cabinets</b>		
Full load capacity (kg)		
Energy consumption, kWh/kg of foodstuffs per standard temperature cycle	EN ISO 22042:2021 Clause 6	
<b>Condensing units</b>		
<b>Condensing units with a rated cooling capacity lower than 5 kW for medium operating temperatures and 2 kW for low operating temperatures</b>		

Evaporating temperature (t)	EN 13215:2016+A1:2020 Annex B	
<b>Parameters at full load and ambient temperature 32 °C</b>		
Rated cooling capacity (P <sub>A</sub> )	EN 13215:2016+A1:2020 Clause 8.1	
Rated power input (D <sub>A</sub> )		
Rated COP (COP <sub>A</sub> )		
<b>Parameters at full load and ambient temperature 25 °C</b>		
Cooling capacity (P <sub>2</sub> )	EN 13215:2016+A1:2020 Clause 8.1	
Power input (D <sub>2</sub> )		
COP (COP <sub>2</sub> )		
<b>Parameters at full load and ambient temperature 43 °C</b>		
Cooling capacity (P <sub>3</sub> )	EN 13215:2016+A1:2020 Clause 8.1	
Power input (D <sub>3</sub> )		
COP (COP <sub>3</sub> )		
<b>Condensing units with a rated cooling capacity higher than 5 kW for medium operating temperatures and 2 kW for low operating temperatures respectively</b>		
Evaporating temperature (t)		
Annual electricity consumption (Q)		
Seasonal energy performance ratio (SEPR)		
<b>Parameters at full load and ambient temperature 32 °C</b>		
Rated cooling capacity (P <sub>A</sub> )	EN 13215:2016+A1:2020 Clause 8.1	
Rated power input (D <sub>A</sub> )		
Rated COP (COP <sub>A</sub> )		
<b>Parameters at part load and ambient temperature 25 °C</b>		
Cooling capacity (P <sub>B</sub> )	EN 13215:2016+A1:2020 Clause 8.1	
Power input (D <sub>B</sub> )		

COP (COP <sub>B</sub> )		
<b>Parameters at part load and ambient temperature 15 °C</b>		
Cooling capacity (P <sub>C</sub> )	EN 13215:2016+A1:2020 Clause 8.1	
Power input (D <sub>C</sub> )		
COP (COP <sub>C</sub> )		
<b>Parameters at part load and ambient temperature 5 °C</b>		
Cooling capacity (P <sub>D</sub> )	EN 13215:2016+A1:2020 Clause 8.1	
Power input (D <sub>D</sub> )		
COP (COP <sub>D</sub> )		
<b>Parameters at full load and ambient temperature 43 °C</b>		
Cooling capacity (P <sub>3</sub> )	EN 13215:2016+A1:2020 Clause 8.1	
Power input (D <sub>3</sub> )		
COP (COP <sub>3</sub> )		
<b>Process chillers</b>		
Operating temperature (t)		
Annual electricity consumption (Q)	EN 14825:2022 Clause 10	
Seasonal energy performance ratio (SEPR)	EN 14825:2022 Clause 10	
<b>Parameters at full load and reference ambient temperature (point A / point B / point C / point D)</b>		
Rated cooling capacity (P <sub>A</sub> / P <sub>B</sub> / P <sub>C</sub> / P <sub>D</sub> )		
Rated power input (D <sub>A</sub> / D <sub>B</sub> / D <sub>C</sub> / D <sub>D</sub> )		
Rated EER (EER <sub>A</sub> / EER <sub>B</sub> / EER <sub>C</sub> / EER <sub>D</sub> )	EN 14825:2022 Clause 11	
<b>Applicable to all products in scope</b>		
Disassembly, recycling or disposal at end-of-life	EN 45553:2020	Disassembly aspects.



	EN 45555:2019	Assessing the recyclability and recoverability of an energy related product.
	EN 45558:2019	Critical raw material (CRM) content.
	EN 45559:2019	Methods for providing information relating to material efficiency.

[Table to be updated once draft has been agreed.]

DRAFT

### Verification procedure for market surveillance purposes

The verification tolerances defined in this Annex relate only to the verification by Member State authorities of the declared values and shall not be used by the manufacturer, importer or authorised representative as an allowed tolerance to establish the values in the technical documentation or in interpreting these values with a view to achieving compliance or to communicate better performance by any means.

Where a model has been designed to be able to detect it is being tested (e.g. by recognising the test conditions or test cycle), and to react specifically by automatically altering its performance during the test with the objective of reaching a more favourable level for any of the parameters specified in this Regulation or included in the technical documentation or included in any of the documentation provided, the model and all equivalent models shall be considered not compliant.

As part of verifying the compliance of a product model with the requirements laid down in this Regulation pursuant to Article 3(2) of Directive 2009/125/EC, the authorities of the Member States shall apply the following procedure for the requirements referred to in Annex II for professional refrigerated storage cabinets, Annex V for scientific and healthcare refrigerated storage cabinets, Annex VI for blast cabinets, Annex VIII for condensing units, Annex X for process chillers:

- (1) The Member State authorities shall verify one single unit of the model.
- (2) The model shall be considered to comply with the applicable requirements if:
  - (a) the values given in the technical documentation pursuant to Annex IV, point 2 to Directive 2009/125/EC (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the manufacturer, importer or authorised representative than the results of the corresponding measurements carried out pursuant to paragraph (g) thereof;
  - (b) the declared values meet any requirements laid down in this Regulation, and any required product information published by the manufacturer, importer or authorised representative does not contain values that are more favourable for the manufacturer, importer or authorised representative than the declared values;
  - (c) when the Member State authorities test the unit of the model, the determined values (the values of the relevant parameters as measured in testing and the values

calculated from these measurements) comply with the respective verification tolerances as given in Table 10 for professional, scientific and healthcare refrigerated storage cabinets, Table 11 for blast cabinets, Table 12 for condensing units, Table 13 for process chillers.

- (3) If the results referred to in point 2(a) or (b) are not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
- (4) If the result referred to in point 2(c) is not achieved, the Member State authorities shall select three additional units of the same model for testing. As an alternative, the three additional units selected may be of one or more equivalent models.
- (5) The model shall be considered to comply with the applicable requirements if, for these three units, the arithmetical mean of the determined values complies with the respective verification tolerances given in Table 10 for professional, scientific and healthcare refrigerated storage cabinets, Table 11 for blast cabinets, Table 12 for condensing units, Table 13 for process chillers.
- (6) If the result referred to in point 5 is not achieved, the model and all equivalent models shall be considered not to comply with this Regulation.
- (7) The Member State authorities shall provide all relevant information to the authorities of the other Member States and to the Commission without delay after a decision has been taken on the non-compliance of the model according to points 3, 6 or according to the second paragraph of this Annex.

The Member State authorities shall use the measurement and calculation methods set out in Annexes III and IV for professional, scientific and healthcare refrigerated storage cabinets, Annex VII for blast cabinets, Annex IX for condensing units, Annex XI for process chillers

The Member State authorities shall only apply the verification tolerances that are set out in Table 10 for professional, scientific and healthcare refrigerated storage cabinets, Table 11 for blast cabinets, Table 12 for condensing units, Table 13 for process chillers and shall only use the procedure described in points 1 to 7 for the requirements referred to in this Annex. No other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

*Table 10*

**Verification tolerances for professional, scientific and healthcare refrigerated storage cabinets**

Parameters	Verification tolerances
Net volume	The determined value shall not be lower than the declared value by more than 3 %
Energy consumption ( $E_{24h}$ )	The determined value shall not exceed the declared value by more than 10 %

Table 11

### Verification tolerances for blast cabinets

Parameters	Verification tolerances
Net volume	The determined value shall not be lower than the declared value by more than 3 %
Energy consumption (kWh per kg of foodstuff per cycle)	The determined value shall not exceed the declared value by more than 10 %

Table 12

### Verification tolerances for condensing units

Parameters	Verification tolerances
The seasonal energy performance ratio ( $SEPR$ ) of condensing units with a rated cooling capacity higher than 2 kW at low temperature and 5 kW at medium temperature.	The determined value shall not be more than 10 % lower than the declared value, with point A measured at the rated cooling capacity.
The rated coefficient of performance ( $COP_A$ ) of condensing units with a rated cooling capacity lower than 2 kW at low temperature and 5 kW at medium temperature.	The determined value shall not be more than 10 % lower than the declared value measured at the rated cooling capacity.
The coefficients of performance $COP_B$ , $COP_C$ and $COP_D$ of condensing units with a rated cooling capacity higher than 2 kW at low temperature and 5 kW at medium temperature.	The determined values shall not be more than 10 % lower than the declared value measured at the rated cooling capacity.

Table 13

**Verification tolerances for process chillers**

Parameters	Verification tolerances
Seasonal energy performance ratio ( <i>SEPR</i> )	The determined value shall not be more than 10 % lower than the declared value, with point A measured at the rated cooling capacity.
Rated energy efficiency ratio ( <i>EER<sub>A</sub></i> )	The determined value shall not be more than 10 % lower than the declared value, measured at the rated cooling capacity.

**Indicative benchmarks**

- At the date of entry into force of this Regulation, the best available technology on the market for professional refrigerated storage cabinets in terms of their energy efficiency index (EEI) was identified as follows:

	Net volume	Annual energy consumption	EEI
Chilled vertical	450	303	38
Chilled counter	300	303	29
Frozen vertical	450	1 172	46
Frozen counter	200	1 564	60

- At the date of entry into force of this Regulation, the best available technology on the market for blast cabinets in terms of energy consumption in kWh per kg of foodstuff per cycle was identified as follows:

Chilling: 0,027

Freezing: 0,115

- At the date of entry into force of this Regulation, the best available technology on the market for condensing units in terms of rated coefficient of performance and seasonal energy performance ratio was identified as follows:

Operating temperature	Rated capacity $P_A$	Applicable ratio	Benchmark value
Medium	$0,2 \text{ kW} < P_A \leq 5 \text{ kW}$	COP	TBD
	$5 \text{ kW} < P_A \leq 50 \text{ kW}$	SEPR	TBD
Low	$0,1 \text{ kW} < P_A \leq 2 \text{ kW}$	COP	TBD
	$2 \text{ kW} < P_A \leq 20 \text{ kW}$	SEPR	TBD

4. At the date of entry into force of this Regulation, the best available technology on the market for process chillers in terms of seasonal energy performance ratio was identified as follows:

Heat transfer medium at the condensing side	Operating temperature	Rated cooling capacity	Minimum
Air	Medium	$P_A < 100$ kW	TBD
		$100 \leq P_A < 300$ kW	TBD
		$P_A > 300$ kW	TBD
	Low	$P_A \leq 200$ kW	TBD
		$P_A > 200$ kW	TBD
Water	Medium	$P_A \leq 300$ kW	TBD
		$P_A > 300$ kW	TBD
	Low	$P_A \leq 200$ kW	TBD
		$P_A > 200$ kW	TBD