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ANNEXES 1 to 5

ANNEXES

to the

COMMISSION REGULATION (EU) .../...

laying down ecodesign requirements for refrigerating appliances with a direct sales function pursuant to Directive 2009/125/EC of the European Parliament and of the Council

{SEC(2019) 338 final} - {SWD(2019) 352 final} - {SWD(2019) 353 final}

ANNEX I
Definitions applicable for the Annexes

The following definitions shall apply:

- (1) ‘spare part’ means a separate part that can replace a part with the same or similar function in a product;
- (2) ‘professional repairer’ means an operator or undertaking which provides services of repair and professional maintenance of refrigerating appliances with a direct sales function;
- (3) ‘door gasket’ means a mechanical seal which fills the space between the door and the cabinet of the refrigerating appliance with a direct sales function to prevent leakage from the cabinet to the outdoor air;
- (4) ‘vacuum insulation panel’ (VIP) means an insulation panel consisting of a firm, highly-porous material encased in a thin, gas-tight outer envelope, from which the gases are evacuated and which is sealed to prevent outside gases from entering the panel;
- (5) ‘ice-cream freezer’ means a horizontal cabinet intended to store and/or display and sell pre-packed ice cream, where access by the consumer to the pre-packed ice cream is achieved by opening a non-transparent or transparent lid from the top, with a net volume ≤ 600 litres (L) and, only in the case of transparent lid ice-cream freezers, a net volume divided by the total display area $\geq 0,35$ meters (m);
- (6) ‘transparent lid’ means a door made of a transparent material that covers at least 75% of the door surface and that allows the end-user to see items through it;
- (7) ‘total display area’ (TDA) means the total visible foodstuffs and other items area, including visible area through glazing, defined by the sum of horizontal and vertical projected surface areas of the net volume, expressed in square meters (m²);
- (8) ‘guarantee’ means any undertaking by the retailer or a manufacturer, importer or authorised representative to the consumer, to:
 - (a) reimburse the price paid; or
 - (b) replace, repair or handle refrigerating appliances with a direct sales function in any way if they do not meet the specifications set out in the guarantee statement or in the relevant advertising;
- (9) ‘gelato-scooping cabinet’ means a refrigerating appliance with a direct sales function in which ice-cream can be stored, displayed and scooped, within prescribed temperature limits as set out in Annex III, Table 5;
- (10) ‘annual energy consumption’ (*AE*) means the average daily energy consumption multiplied by 365 (days per year), expressed in kilowatt hour per year (kWh/a), calculated in accordance with point 2(b) of Annex III;
- (11) ‘daily energy consumption’ (*E_{daily}*) means the energy used by a refrigerating appliance with a direct sales function over 24 hours at reference conditions, expressed in kilowatt hour per day (kWh/24h);
- (12) ‘standard annual energy consumption’ (*SAE*) means the reference annual energy consumption of a refrigeration appliance with a direct sales function, expressed in kilowatt hour per year (kWh/a), calculated in accordance with point 2(c) of Annex III;

- (13) 'M' and 'N' means modelling parameters that take into account the total display area or volume-dependence of the energy use, with values as set out in Table 4, Annex III;
- (14) 'temperature coefficient' (C) means a correction factor that accounts for the difference in operating temperature;
- (15) 'climate class factor' (CC) means a correction factor that accounts for the difference in ambient conditions for which the refrigerating appliance is designed for;
- (16) 'P' means a correction factor that accounts for the differences between integral and remote cabinets;
- (17) 'integral cabinet' means a refrigerating appliance with a direct sales function that has an integrated refrigeration system which incorporates a compressor and condensing unit;
- (18) 'refrigerator' means a refrigerating appliance with a direct sales function that continuously maintains the temperature of the products stored in the cabinet at chilled operating temperature;
- (19) 'freezer' means a refrigerating appliance with a direct sales function that continuously maintains the temperature of the products stored in the cabinet at frozen operating temperature;
- (20) 'vertical cabinet' means a refrigerating appliance with a direct sales function with a vertical or inclined display opening from the front;
- (21) 'combined cabinet' means a refrigerating appliance with a direct sales function which combines display and opening directions from a vertical and a horizontal cabinet;
- (22) 'supermarket cabinet' means a refrigerating appliance with a direct sales function intended for the sale and display of foodstuffs and other items in retail applications, such as in supermarkets. Beverage coolers, refrigerated vending machines, gelato-scooping cabinets and ice-cream freezers are not considered supermarket cabinets;
- (23) 'roll-in cabinet' means a supermarket cabinet which enables goods to be displayed directly on their pallets or rolls which can be placed inside by lifting, swinging, or removing the lower front part, where fitted;
- (24) 'M-package' means a test package fitted with a temperature measuring device;
- (25) 'multi-temperature vending machine' means a refrigerated vending machine including at least two compartments with different operating temperatures.

ANNEX II
Ecodesign requirements

1. Energy efficiency requirements:

- (a) From 1 March 2021, the EEI of refrigerating appliances with a direct sales function shall not be above the values as set out in Table 1.

Table 1: Maximum EEI for refrigerating appliances with a direct sales function, expressed in %

	EEI
Ice-cream freezers	80
All other refrigerating appliances with a direct sales function	100

- (b) From 1 September 2023, the EEI of refrigerating appliances with a direct sales function, except for refrigerated drum vending machines, shall not be above the values as set out in Table 2.

Table 2: Maximum EEI for refrigerating appliances with a direct sales function, expressed in %

	EEI
Ice-cream freezers	50
All other refrigerating appliances with a direct sales function, except refrigerated drum vending machines	80

2. Resource efficiency requirements:

From 1 March 2021, refrigerating appliances with a direct sales function shall meet the following requirements:

- (a) Availability of spare parts

- (1) Manufacturers, importers or authorised representatives of refrigerating appliances with a direct sales function 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 refrigerating appliances with a direct sales function 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 refrigerating appliances with a direct sales function 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 refrigerating appliances with a direct sales function 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 refrigerating appliances with a direct sales function 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 refrigerating appliance with a direct sales function (where applicable).

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

- (1) Manufacturers, importers or authorised representatives shall ensure that refrigerating appliances with a direct sales function 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 refrigerating appliances with a direct sales function contains vacuum insulation panels, the refrigerating appliance with a direct sales function shall be labelled with the letters ‘VIP’.

3. Information requirements:

From 1 March 2021, instruction manuals for installers and end-users, and free access websites of manufacturers, importers and authorised representatives shall include the following information:

- (a) the recommended setting of temperatures in each compartment for optimum food preservation;
- (b) an estimation of the impact of temperature settings on food waste;
- (c) for beverage coolers: ‘This appliance is intended to operate in climates where the maximum temperature and the humidity are [fill in the applicable warmest temperature of the beverage cooler and the applicable relative humidity of the beverage cooler of Table 7] respectively.’;
- (d) for ice-cream freezers: ‘This appliance is intended to operate in climates where the temperature and the humidity ranges from [fill in the applicable minimum temperature of Table 9] to [fill in the applicable maximum temperature of Table 9] and from [fill in the applicable minimum relative humidity of Table 9] to [fill in the applicable maximum relative humidity of Table 9] respectively.’;
- (e) instructions for the correct installation and end-user maintenance, including cleaning, of the refrigerating appliance with a direct sales function;
- (f) for integral cabinets: ‘If the condenser coil is not cleaned [the recommended frequency for cleaning the condenser coil, expressed in times per year], the efficiency of the appliance will decrease significantly.’;
- (g) access to professional repair such as internet webpages, addresses, contact details;
- (h) 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;
- (i) the minimum period during which spare parts, necessary for the repair of the refrigerating appliance with a direct sales function, are available;
- (j) the minimum duration of the guarantee of the refrigerating appliance with a direct sales function offered by the manufacturer, importer or authorised representative;
- (k) instructions on how to find the model information in the product database, as set out in Regulation (EU) 2019/XXX *[OP- Please insert here the number of Regulation C(2019) 1815]* 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.

ANNEX III
Measurement methods and calculations

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements and calculations shall be made using harmonised standards, or other reliable, accurate and reproducible methods, which take into account the generally recognised state-of-the-art methods and are in line with the following provisions set out below. The reference numbers of these harmonised standards have been published for this purpose in the *Official Journal of the European Union*.

1. General conditions for testing:
 - (a) the ambient conditions shall correspond to Set 1, except for ice-cream freezers and gelato-scooping cabinets which shall be tested in ambient conditions corresponding to Set 2, as set out in Table 3;
 - (b) where a compartment can be set to different temperatures, it shall be tested at the lowest operating temperature;
 - (c) refrigerated vending machines with compartments with variable volumes shall be tested with the net volume of the compartment with the highest operating temperature adjusted to its minimum net volume;
 - (d) for beverage coolers, the specified cooling speed shall be according to the half reload recovery time.

Table 3: Ambient conditions

	Dry bulb temperature, °C	Relative humidity, %	Dew point, °C	Water vapour mass in dry air, g/kg
Set 1	25	60	16,7	12,0
Set 2	30	55	20,0	14,8

2. Determination of the EEI:
 - (a) For all refrigerating appliances with a direct sales function, the EEI, expressed in % and rounded to the first decimal place, is the ratio of the *AE* (in kWh/a) and the reference *SAE* (in kWh/a) and is calculated as:

$$EEI = AE / SAE.$$

- (b) The *AE*, expressed in kWh/a and rounded to two decimal places, is calculated as follows:

$$AE = 365 \times E_{daily};$$

with:

- *E_{daily}* is the energy consumption of the refrigerating appliance with a direct sales function over 24 hours, expressed in kWh/24h and rounded to three decimal places.
- (c) The *SAE* is expressed in kWh/a and rounded to two decimal places. For refrigerating appliances with a direct sales function with all compartments having the same temperature class and for refrigerated vending machines, the *SAE* is calculated as follows:

$$SAE = 365 \times P \times (M + N \times Y) \times C.$$

For refrigerating appliances with a direct sales function with more than one compartment having different temperature classes, with the exception of refrigerated vending machines, the *SAE* is calculated as follows:

$$SAE = 365 \times P \times \sum_{c=1}^n (M + N \times Y_c) \times C_c;$$

where:

- (1) *c* is the index number for a compartment type ranging from 1 to *n*, with *n* being the total number of compartment types.
- (2) The values of *M* and *N* are given in Table 4.

Table 4: M and N values

Category	Value for M	Value for N
Beverage coolers	2,1	0,006
Ice-cream freezers	2,0	0,009
Refrigerated vending machines	4,1	0,004
Gelato-scooping cabinets	25,0	30,400
Vertical and combined supermarket refrigerator cabinets	9,1	9,100
Horizontal supermarket refrigerator cabinets	3,7	3,500
Vertical and combined supermarket freezer cabinets	7,5	19,300
Horizontal supermarket freezer cabinets	4,0	10,300
Roll-in cabinets (from 1 March 2021)	9,2	11,600
Roll-in cabinets (from 1 September 2023)	9,1	9,100

- (3) The values of *C*, the temperature coefficient, are given in Table 5.

Table 5: Temperature conditions and corresponding temperature coefficient values, C

(a) Supermarket cabinets					
Category	Temperature class	Highest temperature of warmest M-package (°C)	Lowest temperature of coldest M-package (°C)	Highest minimum temperature of all M-packages (°C)	Value for C
Vertical and	M2	≤ +7	≥ -1	n.a.	1,00

combined supermarket refrigerator cabinets	H1 and H2	$\leq +10$	≥ -1	n.a.	0,82
	M1	$\leq +5$	≥ -1	n.a.	1,15
Horizontal supermarket refrigerator cabinets	M2	$\leq +7$	≥ -1	n.a.	1,00
	H1 and H2	$\leq +10$	≥ -1	n.a.	0,92
	M1	$\leq +5$	≥ -1	n.a.	1,08
Vertical and combined supermarket freezer cabinets	L1	≤ -15	n.a.	≤ -18	1,00
	L2	≤ -12	n.a.	≤ -18	0,90
	L3	≤ -12	n.a.	≤ -15	0,90
Horizontal supermarket freezer cabinets	L1	≤ -15	n.a.	≤ -18	1,00
	L2	≤ -12	n.a.	≤ -18	0,92
	L3	≤ -12	n.a.	≤ -15	0,92
(b) Gelato-scooping cabinets					
Temperature class	Highest temperature of warmest M-package (°C)	Lowest temperature of coldest M-package (°C)	Highest minimum temperature of all M-package (°C)	Value for C	
G1	-10	-14	n.a.	1,00	
G2	-10	-16	n.a.	1,00	
G3	-10	-18	n.a.	1,00	
L1	-15	n.a.	-18	1,00	
L2	-12	n.a.	-18	1,00	
L3	-12	n.a.	-15	1,00	
S	Special classification				1,00
(c) Refrigerated vending machines					
Temperature class**	Maximum measured product temperature (T_V) (°C)		Value for C		
Category 1	7		$1+(12-T_V)/25$		
Category 2	12				
Category 3	3				
Category 4	$(T_{V1}+T_{V2})/2^*$				
Category 6	$(T_{V1}+T_{V2})/2^*$				
(d) other refrigerating appliances with a direct sales function					
Category	Value for C				
Other appliances	1,00				
<i>Notes:</i>					
* For multi-temperature vending machines, T_V shall be the average of T_{V1} (the maximum measured product temperature in the warmest compartment) and T_{V2} (the maximum measured product temperature in the coldest compartment).					
** category 1 = refrigerated closed fronted can and bottle machines where the products are held in stacks, category 2 = refrigerated glass fronted can and bottle, confectionery & snack machines, category 3 = refrigerated glass fronted machines entirely for perishable foodstuffs, category 4 = refrigerated multi-temperature glass fronted machines, category 6 = combination machines consisting of different categories of machine in the same housing and powered by one chiller.					
n.a = not applicable					

(4) Coefficient Y is calculated as follows:

(a) for beverage coolers:

Y_c is the equivalent volume of the compartments of the beverage cooler with target temperature T_c , (Ve_{q_c}), calculated as follows:

$$Y_c = Ve_{q_c} = \text{GrossVolume}_c \times ((25 - T_c)/20) \times CC;$$

where T_c is the average compartment temperature and CC is the climate class factor. The values for T_c are set out in Table 6. The values for CC are set out in Table 7.

Table 6: Temperature classes and corresponding average compartment temperatures (T_c) for beverage coolers

Temperature class*	T_c (°C)
K1	+3,5
K2	+2,5
K3	-1,0
K4	+5,0

Table 7: Operating conditions and corresponding CC values for beverage coolers

Warmest ambient temperature (°C)	Ambient relative humidity (%)	CC
+25	60	1,00
+32	65	1,05
+40	75	1,10

(b) for ice-cream freezers:

Y_c is the equivalent volume of the compartments of the ice-cream freezer with target temperature T_c , (Ve_{q_c}), calculated as follows:

$$Y_c = Ve_{q_c} = \text{NetVolume}_c \times ((12 - T_c)/30) \times CC;$$

where T_c is the average compartment temperature and CC is the climate class factor. The values for T_c are set out in Table 8. The values for CC are set out in Table 9.

Table 8: Temperature classes and corresponding average compartment temperatures (T_c) for ice-cream freezers

Temperature class		T_c (°C)
Warmest M-package temperature colder or equal to in all tests (except lid opening test) (°C)	Warmest M-package maximum temperature rise allowed during the lid opening test (°C)	
-18	2	-18,0
-7	2	-7,0

Table 9: Operating conditions and corresponding CC values for ice-cream freezers

	Minimum	Maximum	CC

	Ambient temperature (°C)	Ambient relative humidity (%)	Ambient temperature (°C)	Ambient relative humidity (%)	
Ice-cream freezer with transparent lid	16	80	30	55	1,00
			35	75	1,10
			40	40	1,20
Ice-cream freezer with non-transparent lid	16	80	30	55	1,00
			35	75	1,04
			40	40	1,10

(c) for refrigerated vending machines:

Y is the net volume of the refrigerated vending machine, which is the sum of the volumes of all compartments within which the products directly available for vending are contained and the volume through which the products pass during the dispensing process, expressed in litres (L) and rounded to the nearest integer.

(d) for all other refrigerating appliances with direct sales function:

Y_c is the sum of the TDA of all compartments of the same temperature class of the refrigerating appliance with a direct sales function, expressed in square meters (m²), and rounded to two decimal places.

(5) The values for P are set out in Table 10.

Table 10: P values

<i>Cabinet type</i>	P
Integral supermarket cabinets	1,10
Other refrigerating appliances with a direct sales function	1,00

ANNEX IV

Verification procedure for market surveillance purposes

The verification tolerances defined in this Annex relate only to the verification of the declared parameters by Member State authorities 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.

When verifying the compliance of a product model with the requirements laid down in this Regulation pursuant to point 2 of Article 3 of Directive 2009/125/EC, for the requirements referred to in this Annex, the authorities of the Member States shall apply the following procedure:

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 point 2 of Annex IV 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; and
 - (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; and
 - (c) when the Member States authorities check the unit of the model, they find that the manufacturer, importer or authorised representative has put in place a system that complies with the requirements in the second paragraph of Article 6; and
 - (d) when the Member States authorities check the unit of the model, it complies with the requirements in the third paragraph of Article 6 and on resource efficiency in point 2 of Annex II; and
 - (e) 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 11.
3. If the results referred to in point 2(a), (b), (c) or (d) 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(e) 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 11.
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 being taken on the non-compliance of the model according to points 3 or 6.

The Member State authorities shall use the measurement and calculation methods set out in Annex III.

The Member State authorities shall only apply the verification tolerances that are set out in Table 11 and shall use only the procedure described in points 1 to 7 for the requirements referred to in this Annex. For the parameters in Table 11, no other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

Table 11: Verification tolerances

Parameters	Verification tolerances
Net volume, and net compartment volume where applicable	The determined value ^a shall not be more than 3 % or 1 L lower – whichever is the greater value – than the declared value.
Gross volume, and gross compartment volume where applicable	The determined value ^a shall not be more than 3 % or 1 L lower – whichever is the greater value – than the declared value
TDA, and compartment TDA where applicable	The determined value ^a shall not be more than 3 % than the declared value.
E_{daily}	The determined value ^a shall not be more than 10 % higher than the declared value
AE	The determined value ^a shall not be more than 10 % higher than the declared value.

^a in the case of three additional units tested as prescribed in point 4, the determined value means the arithmetical mean of the values determined for these three additional units.

ANNEX V
Benchmarks

At the time of entry into force of this Regulation, the best available technology on the market for refrigerating appliances with a direct sales function in terms of their EEI was identified as outlined below.

	TDA (m²), net volume (L) or gross volume (L) as applicable	T₁ or T_v	AE (kWh/a)
Supermarket cabinets (Vertical supermarket refrigerator)	3,3		4526 (= 12,4 kWh/24 h)
Supermarket cabinets (Horizontal supermarket refrigerator)	2,2		2044 (=5,6 kWh/24 h)
Supermarket cabinets (Vertical supermarket freezer)	3		9709 (=26,6 kWh/24 h)
Supermarket cabinets (Horizontal supermarket freezer)	1,4		1621 (= 4,4 kWh/24 h)
	2,76		6424 (=17,6 kWh/24 h)
Can and bottle refrigerated vending machine	548	7 °C	1547 (= 4,24 kWh/24 h)
Spiral refrigerated vending machine	472	3 °C	2070 (= 5,67 kWh/24 h)
Beverage cooler	506		475 (= 1,3 kWh/24 h)
Ice-cream freezer	302		329 (=0,9 kWh/24 h)
Gelato-scooping cabinet	1,43		10862 (= 29,76 kWh/24 h)