

Commission Delegated Regulation (EU) 2019/2016 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of refrigerating appliances and repealing Commission Delegated Regulation (EU) No 1060/2010 (Text with EEA relevance)

ANNEX I

Definitions applicable for the Annexes

The following definitions shall apply:

- (1) ‘quick response (QR) code’ means a matrix barcode included on the energy label of a product model that links to that model’s information in the public part of the product database;
- (2) ‘annual energy consumption’ (AE) means the average daily energy consumption multiplied by 365 (days per year), expressed in kilowatt hour per year (kWh/a), as calculated in accordance with point 3 of Annex IV;
- (3) ‘daily energy consumption’ (E_{daily}) means the electricity used by a refrigerating appliance over 24 hours at reference conditions, expressed in kilowatt hour per 24 hours (kWh/24h), calculated in accordance with point 3 of Annex IV;
- (4) ‘freezing capacity’ means the amount of fresh foodstuffs that can be frozen in a freezer compartment in 24 h; it shall not be lower than 4,5 kg per 24 h per 100 litres of volume of the freezer compartment, with a minimum of 2,0 kg/24h;
- (5) ‘chill compartment’ means a compartment which is able to control its average temperature within a certain range without user-adjustments of its control, with a target temperature equal to 2 °C, and storage conditions ranging from - 3 °C to 3 °C, as set out in Annex IV, Table 3;
- (6) ‘airborne acoustical noise emission’ means the sound power level of a refrigerating appliance, expressed in dB(A) re 1 pW (A-weighted);
- (7) ‘anti-condensation heater’ means a heater which prevents condensation on the refrigeration appliance;
- (8) ‘ambient controlled anti-condensation heater’ means an anti-condensation heater where the heating capacity depends on either the ambient temperature or the ambient humidity or both;
- (9) ‘auxiliary energy’ (E_{aux}) means the energy used by an ambient controlled anti-condensation heater, expressed in kilowatt hour per annum (kWh/a);
- (10) ‘dispenser’ means a device that dispenses chilled or frozen load on demand from a refrigerating appliance, such as ice-cube dispensers or chilled water dispensers;
- (11) ‘variable temperature compartment’ means a compartment intended for use as two (or more) alternative compartment types (for example a compartment that can be either a fresh food compartment or freezer compartment) and which is capable of being set by a user to continuously maintain the operating temperature range applicable for each declared compartment type. A compartment intended for use as a single compartment type that can also meet storage conditions of other compartment types (for example a chill compartment that may also fulfil 0-star requirements) is not a variable temperature compartment;
- (12) ‘network’ means a communication infrastructure with a topology of links, an architecture, including the physical components, organisational principles, communication procedures and formats (protocols);

- (13) '2-star section' means part of a 3-star or 4-star compartment which does not have its own individual access door or lid and with target temperature and storage conditions of - 12 °C;
- (14) 'climate class' means the range of ambient temperatures, as set out in point 1(j) of Annex IV, in which the refrigerating appliances are intended to be used, and for which the required storage conditions specified in Annex IV, Table 3 are met simultaneously in all compartment(s);
- (15) 'defrost and recovery period' means the period from the initiation of a defrost control cycle until stable operating conditions are re-established;
- (16) 'auto-defrost' means a feature by which compartments are defrosted without user intervention to initiate the removal of frost accumulation at all temperature-control settings or to restore normal operation, and the disposal of the defrost water is automatic;
- (17) 'defrosting type' means the method to remove frost accumulation on the evaporator(s) of a refrigerating appliance; that is auto-defrost or manual defrost;
- (18) 'manual defrost' means not having an auto-defrost function;
- (19) 'low noise refrigerating appliance' means a refrigerating appliance without vapour compression and with an airborne acoustical noise emission lower than 27 A-weighted decibel referred to 1 pico watt (dB(A) re 1 pW);
- (20) 'steady-state power consumption' (P_{ss}) means the average power consumption in steady-state conditions, expressed in watt (W);
- (21) 'incremental defrost and recovery energy consumption' (ΔE_{d-f}) means the extra average energy consumption for a defrost and recovery operation expressed in watt hour (Wh);
- (22) 'defrost interval' (t_{d-f}) means the representative average interval, expressed in hour (h), between one time of activation of the defrost heater and the next in two subsequent defrost and recovery cycle; or if there is no defrost heater one time of deactivation of the compressor and the next in two subsequent defrost and recovery cycles;
- (23) 'load factor' (L) means a factor accounting for the extra (beyond what is already anticipated through the higher average ambient temperature for testing) cooling load from introducing warm foodstuffs, with values as set out in point 3(a) of Annex IV;
- (24) 'standard annual energy consumption' (SAE) means the reference annual energy consumption of a refrigerating appliance, expressed in kilowatt hour per year (kWh/a), as calculated in accordance with point 4 of Annex IV;
- (25) 'combi parameter' (C) means a modelling parameter that takes into account the synergy effect when different compartment types are combined in one appliance, with values as set out in Annex IV, Table 4;
- (26) 'door heat loss factor' (D) means a compensation factor for combi appliances according to the number of different temperature compartments or the number of external doors, whichever is lower and as set out in Annex IV, Table 5. For this factor, 'compartment' does not refer to sub-compartment;
- (27) 'combi appliance' means a refrigerating appliance that has more than one compartment type of which at least one unfrozen compartment;

- (28) ‘defrost factor’ (A_c) means a compensation factor that takes into account whether the refrigerating appliance has an auto-defrost or a manual defrost, with values as set out in Annex IV, Table 5;
- (29) ‘built-in factor’ (B_c) means a compensation factor that takes into account whether the refrigerating appliance is built-in or freestanding, with values as set out in Annex IV, Table 5;
- (30) ‘freestanding appliance’ means a refrigerating appliance that is not a built-in appliance;
- (31) ‘ M_c ’ and ‘ N_c ’ means modelling parameters that take into account the volume-dependence of the energy use, with values as set out in Annex IV, Table 4;
- (32) ‘thermodynamic parameter’ (r_c) means a modelling parameter which corrects the standard annual energy consumption to an ambient temperature of 24 °C, with values as set out in Annex IV, Table 4;
- (33) ‘overall dimensions’ means the space taken up by the refrigerating appliance (height, width and depth) with doors or lids closed, expressed in millimetres (mm);
- (34) ‘temperature rise time’ means the time taken, after the operation of the refrigerated system has been interrupted, for the temperature in a 3- or 4-star compartment to increase from -18 to -9 °C expressed in hours (h);
- (35) ‘winter setting’ means a control feature for a combi appliance with one compressor and one thermostat, which according to the supplier’s instructions can be used in ambient temperatures below +16 °C, consisting of a switching device or function that guarantees, even if it would not be required for the compartment where the thermostat is located, that the compressor keeps on working to maintain the proper storage temperatures in the other compartments;
- (36) ‘fast freeze’ means a feature that can be activated by the end-user according to the supplier’s instructions, which decreases the storage temperature of the freezer compartment(s) to achieve a faster freezing of unfrozen foodstuffs;
- (37) ‘freezer compartment’ or ‘4-star compartment’ means a frozen compartment with a target temperature and storage conditions of -18 °C and which fulfils the requirements for the freezing capacity;
- (38) ‘display mechanism’ means any screen, including tactile screen, or other visual technology used for displaying internet content to users;
- (39) ‘tactile screen’ means a screen responding to touch, such as that of a tablet computer, slate computer or a smartphone;
- (40) ‘nested display’ means visual interface where an image or data set is accessed by a mouse click, mouse roll-over or tactile screen expansion of another image or data set;
- (41) ‘alternative text’ means text provided as an alternative to a graphic allowing information to be presented in non- graphical form where display devices cannot render the graphic or as an aid to accessibility such as input to voice synthesis applications.

ANNEX II

Energy efficiency classes and airborne acoustical emission classes

The energy efficiency class of refrigerating appliances shall be determined on the basis of the energy efficiency index (EEI) as set out in Table 1.

TABLE 1

Energy efficiency classes of refrigerating appliances

| Energy efficiency class | Energy efficiency index (EEI) |
|-------------------------|-------------------------------|
| A | $EEI \leq 41$ |
| B | $42 < EEI \leq 51$ |
| C | $51 < EEI \leq 64$ |
| D | $64 < EEI \leq 80$ |
| E | $80 < EEI \leq 100$ |
| F | $100 < EEI \leq 125$ |
| G | $EEI > 125$ |

The EEI of a refrigerating appliance shall be determined in accordance with point 5 of Annex IV.

TABLE 2

Airborne acoustical noise emission classes

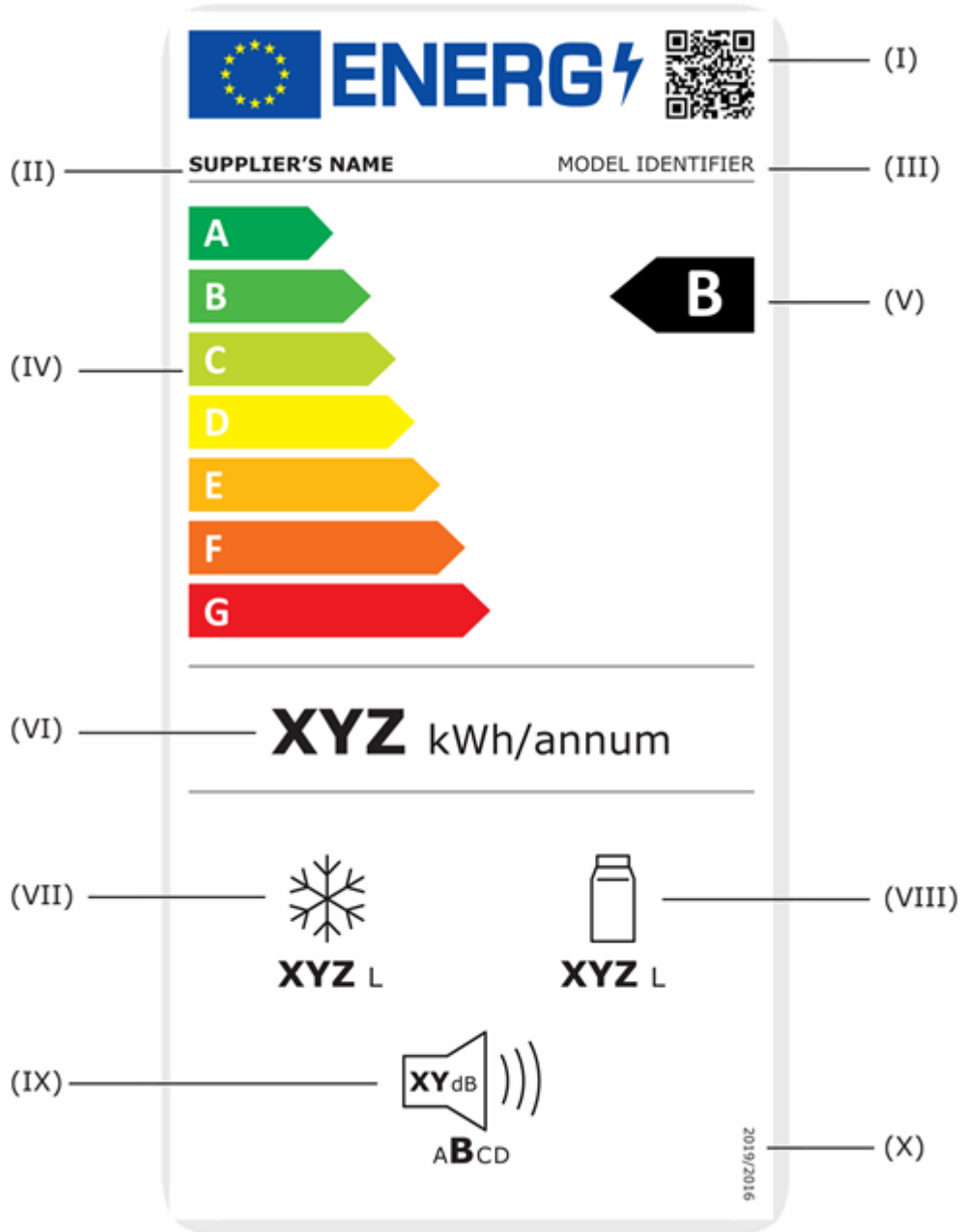
| Airborne acoustical noise emission | Airborne acoustical noise emission class |
|---|--|
| $< 30 \text{ dB(A) re } 1 \text{ pW}$ | A |
| $\geq 30 \text{ dB(A) re } 1 \text{ pW and } < 36 \text{ dB(A) re } 1 \text{ pW}$ | B |
| $\geq 36 \text{ dB(A) re } 1 \text{ pW and } < 42 \text{ dB(A) re } 1 \text{ pW}$ | C |
| $\geq 42 \text{ dB(A) re } 1 \text{ pW}$ | D |

ANNEX III

Label for refrigerating appliances

1. LABEL FOR REFRIGERATING APPLIANCES, EXCEPT FOR WINE STORAGE APPLIANCES
 - 1.1. Label:

Status: This is the original version (as it was originally adopted).

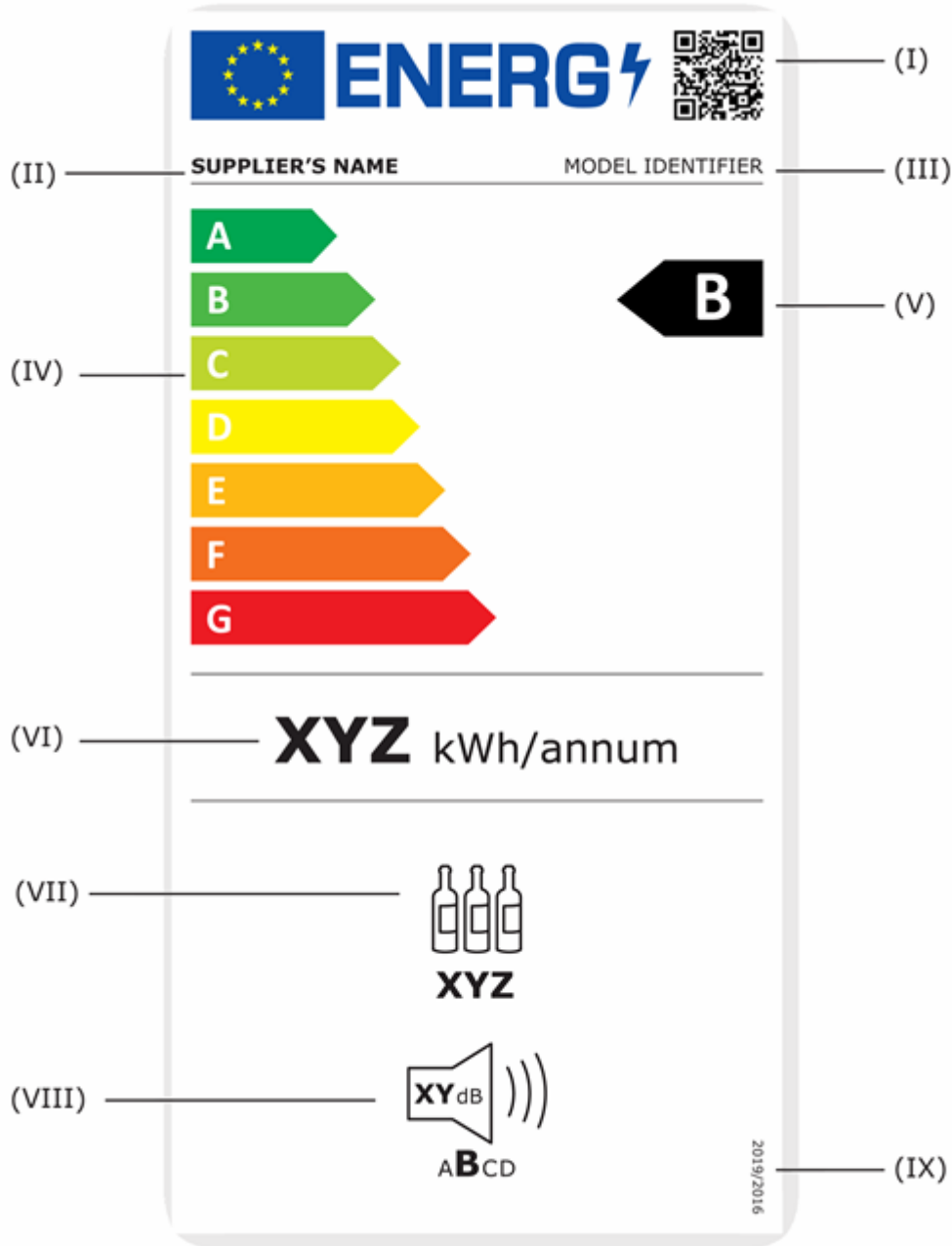


1.2. The following information shall be included in the label:

- I. the QR code;
- II. supplier's name or trade mark;
- III. supplier's model identifier;
- IV. scale of energy efficiency classes from A to G;
- V. the energy efficiency class determined in accordance with Annex II;

- VI. annual energy consumption (*AE*), expressed in kWh per year and rounded to the nearest integer;
 - VII. — the sum of the volumes of the frozen compartment(s), expressed in litres and rounded to the nearest integer;
 - if the refrigerating appliance does not contain frozen compartment(s) the pictogram and the value in litres in VII shall be omitted;
 - VIII. — the sum of the volumes of the chill compartment(s) and the unfrozen compartment(s), expressed in litres and rounded to the nearest integer;
 - if the refrigerating appliance does not contain unfrozen compartment(s) and chill compartment(s) the pictogram and the value in litres in VIII shall be omitted;
 - IX. airborne acoustical noise emissions, expressed in dB(A) re 1 pW and rounded to the nearest integer. The airborne acoustical noise emission class, as set out in Table 2;
 - X. the number of this Regulation, that is '2019/2016'.
2. LABEL FOR WINE STORAGE APPLIANCES
- 2.1. Label:

Status: This is the original version (as it was originally adopted).

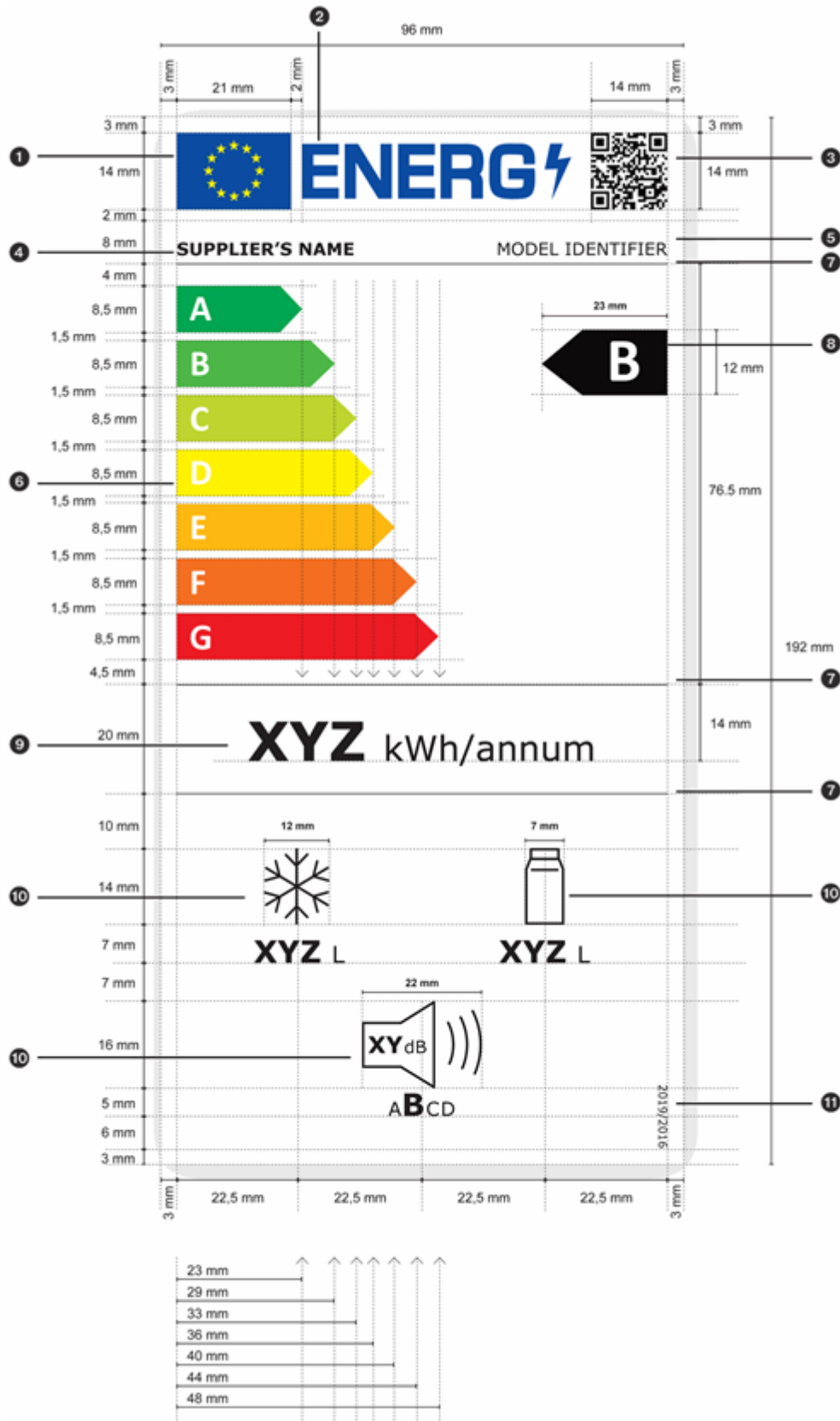


2.2. The following information shall be included in the label:

- I. QR code;
- II. supplier's name or trade mark;
- III. supplier's model identifier;
- IV. scale of energy efficiency classes from A to G;
- V. the energy efficiency class determined in accordance with Annex II;

- VI. *AE*, expressed in kWh per year and rounded to the nearest integer;
 - VII. the number of standard wine bottles that can be stored in the wine storage appliance;
 - VIII. airborne acoustical noise emissions, expressed in dB(A) re 1 pW and rounded to the nearest integer. The airborne acoustical noise emission class, as set out in Table 2;
 - IX. the number of this Regulation that is '2019/2016'.
- 3. LABEL DESIGNS
 - 3.1. Label design for refrigerating appliances, except for wine storage appliances

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3.2. Label design for wine storage appliances

3.3. Whereby:

- (a) The labels shall be at least 96 mm wide and 192 mm high. Where the label is printed in a larger format, its content shall nevertheless remain proportionate to the specifications above.
- (b) The background of the label shall be 100 % white.
- (c) The typefaces shall be Verdana and Calibri.
- (d) The dimensions and specifications of the elements constituting the label shall be as indicated in the label designs for refrigerating appliances and for wine storage appliances.
- (e) Colours shall be CMYK – cyan, magenta, yellow and black, following this example: 0,70,100,0: 0 % cyan, 70 % magenta, 100 % yellow, 0 % black.
- (f) The label shall fulfil all the following requirements (numbers refer to the figures above):
 - ① the colours of the EU logo shall be as follows:
 - the background: 100,80,0,0;
 - the stars: 0,0,100,0;
 - ② the colour of the energy logo shall be: 100,80,0,0;
 - ③ the QR code shall be 100 % black;
 - ④ the supplier's name shall be 100 % black and in Verdana Bold, 9 pt;
 - ⑤ the model identifier shall be 100 % black and in Verdana Regular 9 pt;
 - ⑥ the A to G scale shall be as follows:
 - the letters of the energy efficiency scale shall be 100 % white and in Calibri Bold 19 pt; the letters shall be centred on an axis at 4,5 mm from the left side of the arrows;
 - the colours of the A to G scale arrows shall be as follows:
 - A-class: 100,0,100,0;
 - B-class: 70,0,100,0;
 - C-class: 30,0,100,0;
 - D-class: 0,0,100,0;
 - E-class: 0,30,100,0;
 - F-class: 0,70,100,0;
 - G-class: 0,100,100,0;
 - ⑦ the internal dividers shall have a weight of 0,5 pt and the colour shall be 100 % black;
 - ⑧ the letter of the energy efficiency class shall be 100 % white and in Calibri Bold 33 pt. The energy efficiency class arrow and the corresponding arrow in the A to G scale shall be positioned in such a way that their tips are aligned. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow which shall be 100 % black;

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- 9 the annual energy consumption value shall be in Verdana Bold 28 pt; 'kWh/annum' shall be in Verdana Regular 18 pt. The value and unit shall be centred and 100 % black;
- 10 the pictograms shall be as shown as in the label designs and as follows:
- the pictograms' lines shall have a weight of 1,2 pt and they and the texts (numbers and units) shall be 100 % black;
 - the text under the pictogram(s) shall be in Verdana Bold 16 pt with the unit in Verdana Regular 12 pt, and it shall be centred under the pictogram;
 - for refrigerating appliances, except wine storage appliances: if the appliance contains only frozen compartment(s) or only unfrozen compartment(s), only the relevant pictogram in the top row, as set out in point 1.2 VII and VIII, shall be shown and centred between the two vertical borders of the energy label;
 - the airborne acoustical noise emission pictogram: the number of decibels in the loudspeaker shall be in Verdana Bold 12 pt, with the unit 'dB' in Verdana Regular 9 pt; the range of noise classes (A to D) shall be centred under the pictogram, with the letter of the applicable noise class in Verdana Bold 16 pt and the other letters of the noise classes in Verdana Regular 10 pt;
- 11 the number of the regulation shall be 100 % black and in Verdana Regular 6 pt.

ANNEX IV

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 takes into account the generally recognised state-of-the-art methods and are in line with the 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) for refrigerating appliances with anti-condensation heaters that can be switched on and off by the end-user, the anti-condensation heaters shall be switched on and — if adjustable — set at maximum heating and included in the annual energy consumption (AE) as daily energy consumption (E_{daily});

- (b) for refrigerating appliances with ambient controlled anti-condensation heaters, the ambient controlled electric anti-condensation heaters shall be switched off or otherwise disabled, where possible, during the measurement of energy consumption;
- (c) for refrigerating appliances with dispensers that can be switched on and off by the end-user, the dispensers shall be switched on during the energy consumption test but not operating;
- (d) for the measurement of energy consumption, variable temperature compartments shall operate at the lowest temperature that can be set by the end-user to continuously maintain the temperature range, as set out in Table 3, of the compartment type which has the lowest temperature;
- (e) for refrigerating appliances that can be connected to a network, the communication module shall be activated but there is no need to have a specific type of communication or data exchange or both during the energy consumption test. During the energy consumption test it has to be ensured that the unit is connected to a network;
- (f) for the performance of chill compartments:
 - (1) for a variable temperature compartment rated as a fresh food and/or chill compartment, the energy efficiency index (EEI) shall be determined for each temperature condition and the highest value shall be applied;
 - (2) a chill compartment shall be able to control its average temperature within a certain range without user-adjustments of its control, this can be verified during the energy consumption tests at 16 °C and 32 °C ambient temperature;
- (g) for adjustable volume compartments, when the volumes of two compartments are adjustable relative to one another by the end-user, the energy consumption and the volume shall be tested when the volume of the compartment with the higher target temperature is adjusted to its minimum volume;
- (h) the specific freezing capacity is calculated as 12 times the light load weight, divided by the freezing time to bring the temperature of the light load from +25 to - 18 °C at an ambient temperature of 25 °C expressed in kg/12h and rounded to one decimal place; the light load weight is 3,5 kg per 100 litre of the compartment volume of the frozen compartments, and shall be at least 2,0 kg;
- (i) for 4-star compartments, the specific freezing capacity shall be such that the freezing time to bring the temperature of the light load (3,5 kg/100 l) from +25 to - 18 °C at an ambient temperature of 25 °C, is smaller than or equal to 18,5 h;
- (j) for the determination of the climate classes, the acronym for the ambient temperature range, that is SN, N, ST or T:
 - (1) the extended temperate (SN) has a temperature range from 10 °C to 32 °C;
 - (2) the temperate (N) has a temperature range from 16 °C to 32 °C;
 - (3) the subtropical (ST) has a temperature range from 16 °C to 38 °C; and
 - (4) the tropical (T) has a temperature range from 16 °C to 43 °C.

2. Storage conditions and target temperatures per compartment type:

Table 3 sets out the storage conditions and target temperature per compartment type.

3. Determination of the *AE*:

(a) For all refrigerating appliances, except for low noise refrigerating appliances:

The energy consumption shall be determined by testing at an ambient temperature of 16 °C and 32 °C.

To determine the energy consumption, the average air temperatures in each compartment shall be equal to or below the target temperatures specified in Table 3 for each compartment type claimed by the supplier. Values above and below target temperatures may be used to estimate the energy consumption at the target temperature for each relevant compartment by interpolation, as appropriate.

The main components of energy consumption to be determined are:

- a set of steady state power consumption values (P_{ss}) in W and rounded to one decimal place, each at a specific ambient temperature and at a set of compartment temperatures, which are not necessarily the target temperatures;
- the representative incremental defrost and recovery energy consumption (ΔE_{d-f}), in Wh and rounded to one decimal place, for products with one or more auto-defrost systems (each with its own defrost control cycle) measured at an ambient temperature of 16 °C (ΔE_{d-f16}) and 32 °C (ΔE_{d-f32});
- defrost interval (t_{d-f}), expressed in h and rounded to three decimal places, for products with one or more defrost systems (each with its own defrost control cycle) measured at an ambient temperature of 16 °C (t_{d-f16}) and 32 °C (t_{d-f32}). t_{d-f} shall be determined for each system under a certain range of conditions;
- for each test performed the P_{ss} and ΔE_{d-f} are added together to form a daily energy consumption at a certain ambient temperature $E_T = 0,001 \times 24 \times (P_{ss} + \Delta E_{d-f}/t_{d-f})$, expressed in kWh/24h, specific to the settings applied;
- E_{aux} , expressed in kWh/a and rounded to three decimal places. E_{aux} is limited to the ambient controlled anti-condensation heater and is determined from the heater's power consumption at a number of ambient temperature and humidity conditions, multiplied with the probability that this ambient temperature and humidity condition occurs and summed; this result is subsequently multiplied with a loss factor to account for heat leakage into the compartment and its subsequent removal by the refrigeration system.

Table 3

Storage conditions and target temperature per compartment type

| Group | Compartment type | Note | Storage conditions | | T_c |
|----------------------------------|------------------|------|--------------------|-----------|-------|
| | | | T_{min} | T_{max} | |
| Name | Name | no. | °C | °C | °C |
| Unfrozen compartments | Pantry | a | +14 | +20 | +17 |
| | Wine storage | bf | +5 | +20 | +12 |
| | Cellar | a | +2 | +14 | +12 |
| | Fresh food | a | 0 | +8 | +4 |
| Chill compartment | Chill | c | -3 | +3 | +2 |
| Frozen compartments & ice-making | 0-star | d | n.a. | 0 | 0 |
| | 1-star | d | n.a. | -6 | -6 |
| | 2-star | de | n.a. | -12 | -12 |
| | 3-star | de | n.a. | -18 | -18 |
| | freezer (4-star) | de | n.a. | -18 | -18 |

Notes

a T_{min} and T_{max} are the average values measured over the test period (average over time and over a set of sensors).

b The average temperature variation over the test period for each sensor shall be no more than $\pm 0,5$ kelvin (K). During a defrost and recovery period the average of all sensors is not permitted to rise more than 1,5 K above the average value of the compartment.

c T_{min} and T_{max} are instantaneous values during the test period.

d T_{max} is the maximum value measured over the test period (maximum over time and over a set of sensors).

e If the compartment is of the auto-defrosting type, the temperature (defined as the maximum of all sensors) is not permitted to rise more than 3,0 K during a defrost and recovery period.

f T_{min} and T_{max} are the average values measured over the test period (average over time for each sensor) and define the maximum allowed temperature operating range

n.a.=not applicable

Each of these parameters shall be determined through a separate test or set of tests. Measurement data is averaged over a test period which is taken after the appliance has been in operation for a certain time. To improve the efficiency and accuracy of testing, the length of the test period shall not be fixed; it shall be such that the appliance is in steady state condition during this test period. This is validated by examining all data within this test period against a set of stability criteria and whether enough data could be collected in this steady state.

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AE , expressed in kWh/a and rounded to two decimal places, shall be calculated as follows:

$$AE = 365 \times E_{daily}/L + E_{aux}$$

with

- the load factor $L = 0,9$ for refrigerating appliances with only frozen compartments and $L = 1,0$ for all other appliances; and
- with E_{daily} , expressed in kWh/24h and rounded to three decimal places calculated from E_T at an ambient temperature of 16 °C (E_{16}) and at an ambient temperature of 32 °C (E_{32}) as follows:

$$E_{daily} = 0,5 \times (E_{16} + E_{32})$$

where E_{16} and E_{32} are derived by interpolation of the energy test at the target temperatures set out in Table 3.

- (b) For low noise refrigerating appliances:

The energy consumption shall be determined as provided for in point 3(a), but at an ambient temperature of 25 °C instead of at 16 °C and 32 °C.

E_{daily} , expressed in kWh/24h and rounded to three decimal places for the calculation of the AE is then as follows:

$$E_{daily} = E_{25}$$

where E_{25} is E_T at an ambient temperature of 25 °C and derived by interpolation of the energy tests at the target temperatures listed in Table 3.

4. Determination of the standard annual energy consumption (SAE):

- (a) For all refrigerating appliances:

SAE , expressed in kWh/a, and rounded to two decimal places, is calculated as follows:

$$SAE = C \times D \times \sum_{c=1}^n A_c \times B_c \times [V_c/V] \times (N_c + V \times r_c \times M_c)$$

where

- c is the index number for a compartment type ranging from 1 to n , with n the total number of compartment types;
- V_c , expressed in dm³ or litres and rounded to the first decimal place is the compartment volume;
- V , expressed in dm³ or litres and rounded to the nearest integer is the volume with

$$V \leq \sum_{c=1}^n V_c$$
 ;
- r_c , N_c , M_c and C are modelling parameters specific to each compartment with values as set out in Table 4; and
- A_c , B_c and D are the compensation factors with values as set out in Table 5.

When carrying out the calculations above, for the variable temperature compartments, the compartment type with the lowest target temperature for which it is declared suitable is chosen.

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(b) Modelling parameters per compartment type for the calculation of *SAE*:

The modelling parameters are set out in Table 4.

Table 4

The values of the modelling parameters per compartment type

| Compartment type | r_c^a | N_c | M_c | C |
|---------------------|---------|-------|-------|---|
| Pantry | 0,35 | 75 | 0,12 | between 1,15 and 1,56 for combi appliances with 3-or 4-star compartments ^b , 1,15 for other combi appliances, 1,0 for other refrigerating appliances |
| Wine storage | 0,6 | | | |
| Cellar | 0,6 | | | |
| Fresh food | 1,0 | | | |
| Chill | 1,1 | 138 | 0,12 | |
| 0-star & ice-making | 1,2 | 138 | 0,15 | |
| 1-star | 1,5 | | | |
| 2-star | 1,8 | | | |
| 3-star | 2,1 | | | |
| Freezer (4-star) | 2,1 | | | |

a $r_c = (T_a - T_c)/20$; with $T_a = 24$ °C and T_c with values as set out in Table 3.

b C for combi appliances with 3-or 4-star compartments is determined as follows:
 where $frzf$ is the 3- or 4-star compartment volume V_{fr} as a fraction of V with $frzf = V_{fr}/V$:
 — if $frzf \leq 0,3$ then $C = 1,3 + 0,87 \times frzf$;
 — else if $0,3 < frzf < 0,7$ then $C = 1,87 - 1,0275 \times frzf$;
 — else $C = 1,15$.

(c) Compensation factors per compartment type in the calculation of *SAE*:

The compensation factors are set out in Table 5.

Table 5

The values of the compensation factors per compartment type

| Compartment type | B_c | | D | | | | | |
|------------------|----------------|--------------|------------------------|-----------------|------------|-------|-------|---------|
| | Manual defrost | Auto-defrost | Freestanding appliance | Combi-appliance | $\leq 2^a$ | 3^a | 4^a | $> 4^a$ |
| Pantry | 1,0 | | 1,0 | 1,02 | 1,0 | 1,02 | 1,035 | 1,05 |
| Wine storage | | | | | | | | |
| Cellar | | | | | | | | |
| Fresh food | | | | | | | | |

a number of external doors or compartments, whichever is lowest.

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Table 5

The values of the compensation factors per compartment type

| | | | | | | | |
|---------------------|-----|-----|------|--|--|--|--|
| Chill | | | 1,03 | | | | |
| 0-star & ice-making | 1,0 | 1,1 | 1,05 | | | | |
| 1-star | | | | | | | |
| 2-star | | | | | | | |
| 3-star | | | | | | | |
| Freezer (4-star) | | | | | | | |

a number of external doors or compartments, whichever is lowest.

5. Determination of the EEI:

EEI, expressed in % and rounded to the first decimal place, calculated as:

$$EEI = AE/SAE.$$

ANNEX V

Product information sheet

Pursuant to point 1(b) of Article 3, the supplier shall enter into the product database the information as set out in Table 6. If the refrigerating appliance contains multiple compartments of the same type, the lines for these compartments shall be repeated. If a certain compartment type is not present, the compartment parameters and values shall be ‘-’.

TABLE 6

Product information sheet

Supplier’s name or trade mark:

Supplier’s address^b:

Model identifier:

Type of refrigerating appliance:

a as determined in accordance with Commission Delegated Regulation (EU) 2019/2015.

b changes to these items shall not be considered relevant for the purposes of point 4 of Article 4 of Regulation (EU) 2017/1369.

c if the product database automatically generates the definitive content of this cell the supplier shall not enter these data.

d Commission Delegated Regulation (EU) 2019/2015 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of light sources and repealing Commission Delegated Regulation (EU) No 874/2012 (see page 68 of this Official Journal).

e Commission Regulation (EU) 2019/2019 of 1 October 2019 laying down ecodesign requirements for refrigerating appliances pursuant to Directive 2009/125/EC of the European Parliament and of the Council and repealing Commission Regulation (EC) No 643/2009 (see page 187 of this Official Journal).

| | | | |
|-------------------------|----------|--------------------------------|-----------------------------|
| Low-noise appliance: | [yes/no] | Design type: | [built-in/ freestanding] |
| Wine storage appliance: | [yes/no] | Other refrigerating appliance: | [yes/no] |

General product parameters:

| Parameter | | Value | Parameter | Value |
|---|--------|----------------|---|---|
| Overall dimensions (millimetre) | Height | x | Total volume (dm ³ or l) | x |
| | Width | x | | |
| | Depth | x | | |
| EEI | | x | Energy efficiency class | [A/B/C/D/E/ F/G] ^c |
| Airborne acoustical noise emissions (dB(A) re 1 pW) | | x | Airborne acoustical noise emission class | [A/B/C/D] ^c |
| Annual energy consumption (kWh/a) | | x,xx | Climate class: | [extended temperate/ temperate/ subtropical/ tropical] |
| Minimum ambient temperature (°C), for which the refrigerating appliance is suitable | | x ^c | Maximum ambient temperature (°C), for which the refrigerating appliance is suitable | x ^c |
| Winter setting | | [yes/no] | | |

Compartment Parameters:

| Compartment type | Compartment parameters and values | | | |
|------------------|---|---|-----------------------------|--|
| | Compartment Volume (dm ³ or l) | Recommended temperature setting for optimised food storage (°C) These settings shall not contradict the storage | Freezing capacity (kg/24 h) | Defrosting type (auto-defrost = A, manual defrost = M) |
| | | | | |

a as determined in accordance with Commission Delegated Regulation (EU) 2019/2015.

b changes to these items shall not be considered relevant for the purposes of point 4 of Article 4 of Regulation (EU) 2017/1369.

c if the product database automatically generates the definitive content of this cell the supplier shall not enter these data.

d Commission Delegated Regulation (EU) 2019/2015 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of light sources and repealing Commission Delegated Regulation (EU) No 874/2012 (see page 68 of this Official Journal).

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| | | | conditions set out in Annex IV, Table 3 | | |
|----------------------------------|-------------------|-----|--|-------------------------------------|-------|
| Pantry | [yes/no] | x,x | x | — | [A/M] |
| Wine storage | [yes/no] | x,x | x | — | [A/M] |
| Cellar | [yes/no] | x,x | x | — | [A/M] |
| Fresh food | [yes/no] | x,x | x | — | [A/M] |
| Chill | [yes/no] | x,x | x | — | [A/M] |
| 0-star or ice-making | [yes/no] | x,x | x | — | [A/M] |
| 1-star | [yes/no] | x,x | x | — | [A/M] |
| 2-star | [yes/no] | x,x | x | — | [A/M] |
| 3-star | [yes/no] | x,x | x | — | [A/M] |
| 4-star | [yes/no] | x,x | x | x,xx | [A/M] |
| 2-star section | [yes/no] | x,x | x | — | [A/M] |
| Variable temperature compartment | compartment types | x,x | x | x,xx (for 4-star compartments) or - | [A/M] |

For 4-star compartments

| | |
|----------------------|----------|
| Fast freeze facility | [yes/no] |
|----------------------|----------|

Light source parameters^{ab}:

| | |
|----------------------|--------|
| Type of light source | [type] |
|----------------------|--------|

| | |
|-------------------------|-----------------|
| Energy efficiency class | [A/B/C/D/E/F/G] |
|-------------------------|-----------------|

Minimum duration of the guarantee offered by the manufacturer^b:

Additional information:

Weblink to the manufacturer's website, where the information in point 4(a) Annex of Commission Regulation (EU) 2019/2019^{eb} is found:

a as determined in accordance with Commission Delegated Regulation (EU) 2019/2015.

b changes to these items shall not be considered relevant for the purposes of point 4 of Article 4 of Regulation (EU) 2017/1369.

c if the product database automatically generates the definitive content of this cell the supplier shall not enter these data.

d Commission Delegated Regulation (EU) 2019/2015 of 11 March 2019 supplementing Regulation (EU) 2017/1369 of the European Parliament and of the Council with regard to energy labelling of light sources and repealing Commission Delegated Regulation (EU) No 874/2012 (see page 68 of this Official Journal).

e Commission Regulation (EU) 2019/2019 of 1 October 2019 laying down ecodesign requirements for refrigerating appliances pursuant to Directive 2009/125/EC of the European Parliament and of the Council and repealing Commission Regulation (EC) No 643/2009 (see page 187 of this Official Journal).

ANNEX VI

Technical documentation

1. The technical documentation referred to in point 1(d) of Article 3 shall include the following elements:
 - (a) the information as set out in Annex V;
 - (b) the information as set out in Table 7. If the refrigerating appliance contains multiple compartments of the same type, the lines for these compartments shall be repeated. If a certain compartment type is not present, the compartment parameters and values shall be '-'. If a parameter is not applicable, the values of that parameter shall be '-'.

Table 7

Additional information to be included in the technical documentation

A general description of the refrigerating model, sufficient for it to be unequivocally and easily identified:

Product specifications:

General product specifications:

| Parameter | Value | Parameter | Value |
|--|--|--------------------------|-------|
| Annual energy consumption (kWh/a) | x | Auxiliary energy (kWh/a) | x |
| Standard annual energy consumption (kWh/a) | x,xx | EEI (%) | x |
| Temperature rise time (h) | x,xx | Combi parameter | x,xx |
| Door heat loss factor | x,xxx | Load factor | x,x |
| Anti-condensation heater type | [manual on-off/ ambient/other/none] | | |

Additional product specifications for refrigerating appliances, except for low noise refrigerating appliances:

| Parameter | Value | Parameter | Value |
|--|-------|--|-------|
| Daily energy consumption at 16 °C (kWh/24h) | x,xxx | Daily energy consumption at 32 °C (kWh/24h) | x,xxx |
| Incremental defrost and recovery energy consumption ^a at 16 °C (Wh) | x,x | incremental defrost and recovery energy consumption ^a at 32 °C (Wh) | x,x |
| Defrost interval ^a at 16 °C (h) | x,x | Defrost interval ^a at 32 °C (h) | x,x |

^a only for products with one or more auto-defrost systems

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Table 7

Additional information to be included in the technical documentation

Additional product specifications for low noise refrigerating appliances:

| Parameter | Value | Parameter | Value |
|---|-------|--|-------|
| Daily energy consumption at 25 °C (kWh/24h) | x,xxx | Defrost interval ^a at 25 °C (h) | x,x |

Compartment specifications:

Compartment parameters and values

| Compartment type | Target temperature (°C) | Thermodynamic parameter (r_c) | Dynamic | M_c | Defrost factor (A_c) | Built-in factor (B_c) |
|----------------------------------|-------------------------|-----------------------------------|---------|-------|--------------------------|---------------------------|
| Pantry | x | x,xx | x | x,xx | x,xx | x,xx |
| Wine storage | x | x,xx | x | x,xx | x,xx | x,xx |
| Cellar | x | x,xx | x | x,xx | x,xx | x,xx |
| Fresh food | x | x,xx | x | x,xx | x,xx | x,xx |
| Chill | x | x,xx | x | x,xx | x,xx | x,xx |
| 0-star or ice making | x | x,xx | x | x,xx | x,xx | x,xx |
| 1-star | x | x,xx | x | x,xx | x,xx | x,xx |
| 2-star | x | x,xx | x | x,xx | x,xx | x,xx |
| 3-star | x | x,xx | x | x,xx | x,xx | x,xx |
| 4-star | x | x,xx | x | x,xx | x,xx | x,xx |
| 2-star section | x | x,xx | x | x,xx | x,xx | x,xx |
| Variable temperature compartment | x | x,xx | x | x,xx | x,xx | x,xx |

Additional information:

The references of the harmonised standards or other reliable accurate and reproducible methods applied:

A list of all equivalent models, including model identifiers:

^a only for products with one or more auto-defrost systems

2. Where the information included in the technical documentation for a particular model has been obtained:

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- (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.

ANNEX VII

Information to be provided in visual advertisements, in technical promotional material, in distance selling, except distance selling on the internet

1. In visual advertisements, for the purposes of ensuring conformity with the requirements laid down in point 1(e) of Article 3 and point 1(c) of Article 4, the energy efficiency class and the range of energy efficiency classes available on the label shall be shown as set out in point 4 of this Annex.
2. In technical promotional material, for the purposes of ensuring conformity with the requirements laid down in point 1(f) of Article 3 and point 1(d) of Article 4 the energy efficiency class and the range of energy efficiency classes available on the label shall be shown as set out in point 4 of this Annex.
3. Any paper-based distance selling must show the energy efficiency class and the range of energy efficiency classes available on the label as set out in point 4 of this Annex.
4. The energy efficiency class and the range of energy efficiency classes shall be shown, as indicated in Figure 1, with:
 - (a) an arrow, containing the letter of the energy efficiency class in 100 % white, Calibri Bold and in a font size at least equivalent to that of the price, when the price is shown;
 - (b) the colour of the arrow matching the colour of the energy efficiency class;
 - (c) the range of available energy efficiency classes in 100 % black; and,
 - (d) the size shall be such that the arrow is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a border of 0,5 pt in 100 % black placed around the arrow and the letter of the energy efficiency class.

By way of derogation, if the visual advertisement, technical promotional material or paper-based distance selling is printed in monochrome, the arrow can be in monochrome in that visual advertisement, technical promotional material or paper-based distance selling.

Figure 1

Coloured/monochrome left/right arrow, with range of energy efficiency classes indicated



5. Telemarketing-based distance selling must specifically inform the customer of the energy efficiency class of the product and of the range of energy efficiency classes available on the label, and that the customer can access the full label and the product information sheet through a free access website, or by requesting a printed copy.
6. For all the situations mentioned in points 1 to 3 and 5, it must be possible for the customer to obtain, on request, a printed copy of the label and the product information sheet.

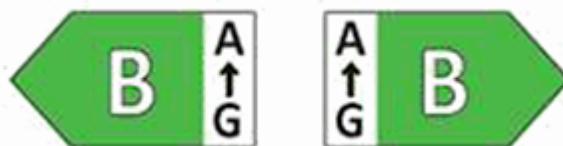
ANNEX VIII

Information to be provided in the case of distance selling through the internet

1. The appropriate label made available by suppliers in accordance with point 1(g) of Article 3 shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the label is clearly visible and legible and shall be proportionate to the size specified in point 3(1) and 3(2) of Annex III for refrigerating appliances. The label may be displayed using a nested display, in which case the image used for accessing the label shall comply with the specifications laid down in point 3 of this Annex. If nested display is applied, the label shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the image.
2. The image used for accessing the label in the case of nested display, as indicated in Figure 2, shall:
 - (a) be an arrow in the colour corresponding to the energy efficiency class of the product on the label;
 - (b) indicate the energy efficiency class of the product on the arrow in 100 % white, Calibri Bold and in a font size equivalent to that of the price;
 - (c) have the range of available energy efficiency classes in 100 % black; and,
 - (d) have one of the following two formats, and its size shall be such that the arrow is clearly visible and legible. The letter in the energy efficiency class arrow shall be positioned in the centre of the rectangular part of the arrow, with a visible border in 100 % black placed around the arrow and the letter of the energy efficiency class:

Figure 2

Coloured left/right arrow, with range of energy efficiency classes indicated



3. In the case of a nested display, the sequence of display of the label shall be as follows:
 - (a) the image referred to in point 2 of this Annex shall be shown on the display mechanism in proximity to the price of the product;
 - (b) the image shall link to the label set out in Annex III;

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- (c) the label shall be displayed after a mouse click, mouse roll-over or tactile screen expansion on the image;
 - (d) the label shall be displayed by pop up, new tab, new page or inset screen display;
 - (e) for magnification of the label on tactile screens, the device conventions for tactile magnification shall apply;
 - (f) the label shall cease to be displayed by means of a close option or other standard closing mechanism;
 - (g) the alternative text for the graphic, to be displayed on failure to display the label, shall be the energy efficiency class of the product in a font size equivalent to that of the price.
4. The electronic product information sheet made available by suppliers in accordance with point 1(b) of Article 3 shall be shown on the display mechanism in proximity to the price of the product. The size shall be such that the product information sheet is clearly visible and legible. The product information sheet may be displayed using a nested display or by referring to the product database, in which case the link used for accessing the product information sheet shall clearly and legibly indicate 'Product information sheet'. If a nested display is used, the product information sheet shall appear on the first mouse click, mouse roll-over or tactile screen expansion on the link.

ANNEX IX

Verification procedure for market surveillance purposes

The verification tolerances set out in this Annex relate only to the verification of the declared parameters by Member State authorities and shall not be used by the supplier as an allowed tolerance to establish the values in the technical documentation. The values and classes on the label or in the product information sheet shall not be more favourable for the supplier than the values reported in the technical documentation.

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, 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 Article 3(3) of Regulation (EU) 2017/1369 (declared values), and, where applicable, the values used to calculate these values, are not more favourable for the supplier than the corresponding values given in the test reports; and
 - (b) the values published on the label and in the product information sheet are not more favourable for the supplier than the declared values, and the indicated energy efficiency class and the airborne acoustical noise emission class

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are not more favourable for the supplier than the class determined by the declared values; and

- (c) when the Member State authorities test the unit of the model, the determined values (that is 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 8.
- (3) If the results referred to in points 2(a) and (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 arithmetic mean of the determined values complies with the respective tolerances given in Table 8.
- (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 once a decision has been taken on the non-compliance of the model according to points 3 and 6.

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

The Member State authorities shall only apply the verification tolerances set out in Table 8 and shall only use the procedure set out in points 1 to 7 for the requirements referred to in this Annex. For the parameters in Table 8, no other tolerances, such as those set out in harmonised standards or in any other measurement method, shall be applied.

TABLE 8

Verification tolerances for measured parameters

| Parameters | Verification tolerances |
|-------------------------------------|---|
| Total volume and compartment volume | The determined value ^a shall not be more than 3 % or 1 litre lower — whichever is the greater value — than the declared value. |
| Freezing capacity | The determined value ^a shall not be more than 10 % lower than the declared value. |
| E_{16}, E_{32} | The determined value ^a shall not be more than 10 % higher than the declared value. |
| E_{aux} | The determined value ^a shall not be more than 10 % higher than the declared value. |
| Annual energy consumption | 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 arithmetic mean of the values determined for these three additional units.

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| | |
|--|--|
| Internal humidity of wine storage appliances (%) | The determined value ^a shall not differ from the declared value by more than 10 %. |
| Airborne acoustical noise emissions | The determined value ^a shall not be more than 2 dB(A) re 1 pW more than the declared value. |
| Temperature rise time | The determined value ^a shall not be more than 15 % higher than the declared value. |

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