

Working document on a possible Commission Directive implementing Council Directive 92/75/EEC with regard to energy labelling of household electric refrigerating appliances

Chapter 1 **Subject matter and scope**

1. This Directive establishes a scheme for the indication by labelling and the provision of supplementary product information concerning the energy consumption of electric mains operated household refrigerating appliances including when they are sold for non-household use or for the refrigeration of items other than foodstuffs.

It also applies to primarily electric mains operated refrigerating appliances that can also run on batteries.

2. This Directive shall not apply to:

- (a) refrigerating appliances which primarily run on other energy sources than electricity such as fuels (e.g. LPG, kerosene, bio-diesel);
- (b) refrigerating appliances that are only battery-operated;
- (c) refrigerating appliances that are only battery-operated, but designed in such a way that they can be connected to electric mains through an additional AC/DC converter, purchased separately, for primary use in non-household applications such as cars, caravans, motor caravans, trucks or vessels;
- (d) custom-made refrigerating appliances, made on a one-off basis and not equivalent to other refrigerating appliance models;
- (e) refrigerating appliances with a storage volume larger than 800 litres;
- (f) refrigerating appliances primarily intended for medical applications for storing and freezing of vaccines and ice pack freezing with a factory fitted non-removable label on the lid or near the top of the door carrying the information about the specific use in Arabic, English, French, mandarin Chinese, Russian and Spanish;
- (g) refrigerating appliances where the removal of refrigerated foodstuffs is electronically sensed and can be automatically transmitted through a network connection to a remote control system for accounting;
- (h) appliances the primary function of which is not the storage of foodstuffs through refrigeration (such as stand-alone ice-makers or chilled water/drinks/beer dispensers).

Chapter 2 **Definitions**

For the purposes of this Directive, in addition to the definitions laid down in Article 1 (4) of Directive 92/75/EC, the following definitions shall apply:

- (1) "foodstuffs" mean food, ingredients, beverages or other items primarily intended for consumption that require refrigeration at specified temperature conditions;
- (2) "household appliance" means a factory-assembled machine designed by the supplier to be used principally for non-professional purposes in dwellings, including cellars, garages and other outbuildings, for housekeeping tasks such as cleaning, cooking,

preparation, upkeep and storage of foodstuffs; including appliances sold as complete building kits to be assembled by the end-user without any specialised intervention in accordance with instructions provided with the kit;

- (3) “refrigerating appliance” means a factory-assembled insulated cabinet with one or more compartments and of suitable volume and equipment for household use, cooled by natural convection or a frost-free system whereby the cooling is obtained by one or more energy-consuming means;
- (4) “refrigerator” means a refrigerating appliance intended for the preservation of foodstuffs, one of whose compartments - or the only compartment in the case of a single compartment appliance - is suitable for the storage of fresh food and/or beverages, including wine;
- (5) “refrigerator-freezer” means a refrigerating appliance having at least one compartment suitable for the storage of fresh food and/or beverages including wine (the fresh-food storage compartment) and at least one other (the food freezer compartment) suitable for the freezing of fresh food and the storage of frozen foodstuffs under three-star storage conditions;
- (6) “frozen-food storage cabinet” means a refrigerating appliance having one or more compartments suitable for the storage of frozen foodstuffs;
- (7) “food freezer” means a refrigerating appliance having one or more compartments suitable for freezing foodstuffs with temperatures ranging from ambient temperature down to -18°C and which is also suitable for the storage of frozen foodstuffs under three-star storage conditions, although in certain instances, two-star sections and/or compartments are permitted within the compartment or cabinet;
- (8) “wine storage appliance” means a refrigerating appliance which has no compartment other than (one or more) wine storage compartment(s);
- (9) “multi-use appliance” means a refrigerating appliance which has no compartment other than (one or more) multi-use compartment(s);
- (10) "equivalent refrigerating appliance" means a model placed on the market with the same gross and storage volumes, same technical, efficiency and performance characteristics, and same compartment types of another refrigerating appliance model placed on the market under a different commercial code number by the same manufacturer;
- (11) "end-user" means a consumer that is buying or expected to buy a refrigerating appliance;
- (12) "placing on the market" means the first making available of a product on the Community market;
- (13) "making available on the market" means any supply of a product for distribution or use on the Community market in the course of a commercial activity, whether in return for payment or free of charge;
- (14) "point of sale" means a location where refrigerating appliances are displayed or offered for sale, hire or hire purchase.

The additional definitions set out in Annex I shall also apply.

Chapter 3
Responsibilities of suppliers

1. Member States shall ensure that suppliers comply with the following requirements:
 - (1) suppliers placing on the market household refrigerating appliances shall supply a label, free of charge, stating:
 - (a) the energy efficiency class as set out in Annex II,
 - (b) the annual energy consumption, the fresh and frozen food volumes and noise emissions within the meaning of Annex III;
 - (2) suppliers placing on the market household refrigerating appliances shall supply a product fiche as set out in Annex VI of this Directive;
 - (3) for a period ending five years after the last refrigerating appliance of a given model has been placed on the market, suppliers shall on request make the technical documentation specified in Annex VII available to the authorities of Member States.
2. The energy efficiency classes shall be based on the energy efficiency index calculated in accordance with Annex IV.
3. The format of the label shall be as set out in Annex III.
4. The terms to be used in the label and the fiche as specified in Chapter 3 (1) shall comply with the specifications in Annex V.

Chapter 4
Responsibilities of dealers

Member States shall ensure that dealers comply with the following requirements:

- (1) dealers shall ensure that, at the point of sale, household refrigerating appliances bear the label provided in accordance with Chapter 3 (1) on the outside of the front or top of the appliance, in such a way as to be clearly visible;
- (2) dealers offering household refrigerating appliances for sale, hire or hire purchase where the end-user cannot be expected to see the appliance displayed, such as by written offers, mail order catalogues, advertisements on the Internet or through other electronic media, shall display the information required in accordance with Chapter 3 (1) in the format specified in Annex VIII to this Directive; the terms to be used shall comply with the specifications in Annex V.

Chapter 5
Measurement methods

The information to be provided under Chapters 3 and 4 shall be obtained by reliable, accurate and reproducible measurement procedures, which take into account the recognised state of the art measurement methods, as set out in Annex IX.

Chapter 6
Verification procedure for market surveillance purposes

Member States shall verify the declared energy efficiency class, the annual energy consumption, the fresh and frozen food volumes and noise emissions, in accordance with the procedure laid down in Annex X.

Chapter 7
Revision

The Commission shall review this Directive in light of technological progress no later than five years after the entry into force and present the result of this review to the Committee set up under Article 10 of Directive 92/75/EEC.

Chapter 8
Repeal

Directive 94/2/EC shall be repealed one year after the entry into force of this Directive.

Chapter 9
Transitional provision

Member States shall allow, until one and a half year after the entry into force of this Directive, the placing on the market, the display, the offer for sale and hire or hire-purchase by mail order, by catalogue, or by other means of refrigerating appliances which comply with the information requirements laid down in Directive 94/2/EC.

Chapter 10
Transposition

1. Member States shall adopt and publish, by [*specific date to be inserted: one year after entry into force of this Directive*] at the latest, the laws, regulations and administrative provisions to comply with this Directive. They shall forthwith communicate to the Commission the text of those provisions and a correlation table between those provisions and this Directive.

They shall apply those provisions from [*one year after entry into force*].

Refrigerating appliances which comply with the provisions of this Directive in addition to the provisions of Directive 94/2/EC, and which are placed on the market or offered for sale, hire or hire-purchase before the date provided for in Chapter 10 (1) second indent shall be deemed to comply with the requirements of that Directive.

When Member States adopt those provisions, the provisions shall contain a reference to this Directive or be accompanied by such a reference on the occasion of their official publication. Member States shall determine how such reference is to be made.

2. Member States shall communicate to the Commission the text of the main provisions of national law which they adopt in the field covered by this Directive.

Chapter 11
Entry into force

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

Chapter 12
Addressees

This Directive is addressed to the Member States.

Done at Brussels,

For the Commission

Member of the Commission

ANNEX I
Definitions applicable for the purposes of Annexes II to X

For the purpose of this Regulation, the following definitions shall apply:

- (a) “compression-type refrigerating appliance” means a refrigerating appliance in which refrigeration is effected by means of a motor-driven compressor;
- (b) “absorption-type refrigerating appliance” means a refrigerating appliance in which refrigeration is effected by an absorption process using heat as energy source;
- (c) “other-type refrigerating appliances” means a refrigerating appliance in which refrigeration is effected by any other technology or process;
- (d) "frost-free system" means a system automatically operated to prevent the permanent formation of frost, in which cooling is provided by forced air circulation, the evaporator or evaporators are defrosted by an automatic defrost system and the water from defrosting is disposed of automatically;
- (e) “frost-free refrigerator” means a refrigerator, other than a single-compartment refrigerator, in which all compartments are automatically defrosted with automatic disposal of the defrosted water and at least one compartment is cooled by a frost-free system and at least one is a “frozen-food storage” compartment;
- (f) “frost-free refrigerator-freezer” means a refrigerator-freezer in which all compartments are automatically defrosted with automatic disposal of the defrosted water and at least one compartment is cooled by a frost-free system;
- (g) “frost-free frozen-food storage cabinet” means a frozen-food storage cabinet in which all compartments are automatically defrosted with automatic disposal of the defrosted water and which is cooled by a frost-free system;
- (h) “frost-free food freezer” means a food freezer in which all compartments are automatically defrosted with automatic disposal of the defrosted water and at least one compartment is cooled by a frost-free system;
- (i) “built-in appliance” means a fixed refrigerating appliance intended to be installed in a cabinet, in a prepared recess in a wall or similar location, with the need of furniture finishing;
- (j) “refrigerator-cellar” means a refrigerating appliance where at least a fresh food storage compartment and another compartment, different from a frozen food storage compartment or a chill compartment, are present;
- (k) “cellar” means a refrigerating appliance where only one or more cellar compartment(s) is present;
- (l) “refrigerator-chiller” means a refrigerating appliance where at least a fresh food storage compartment and a chill compartment, but no frozen food storage compartments, are present;
- (m) "compartments" means any of the compartments listed in points (n) to (u);
- (n) "fresh-food storage compartment" means a compartment designed for the storage of unfrozen foodstuffs, which may itself be divided into sub-compartments.

- (o) "cellar compartment" means a compartment intended for the storage of particular foodstuffs or beverages at a temperature warmer than that of the fresh-food storage compartment;
- (p) "chill compartment" means a compartment intended specifically for the storage of highly perishable foodstuffs;
- (q) "ice-making compartment" means a low-temperature compartment intended specifically for the freezing and storage of ice;
- (r) "frozen-food storage compartment" means a low-temperature compartment intended specifically for the storage of frozen foodstuffs; frozen-food storage compartments are classified according to temperature in:
 - (i) "one-star compartment": a frozen-food storage compartment in which the temperature is not warmer than - 6 °C;
 - (ii) "two-star compartment": a frozen-food storage compartment in which the temperature is not warmer than - 12 °C;
 - (iii) "three-star compartment": a frozen-food storage compartment in which the temperature is not warmer than - 18 °C;
 - (iv) "food freezer compartment" (named also "four-star compartment"): a compartment suitable for freezing foodstuffs from ambient temperature down to -18°C, and which is also suitable for the storage of frozen food under three-star storage conditions. Two-star sections may exist within the compartment; the rated freezing capacity shall be at least 4,5 kg per 100 l of its storage volume in 24 hours, and in no case less than 2 kg;
 - (v) "0-star compartment": a frozen-food storage compartment in which the temperature is <0°C and that can be used also for the freezing and storage of ice but it is not intended for the storage of highly perishable foodstuffs
- (s) "wine storage compartment" means a compartment exclusively designed either for short term wine storage to bring wines to the ideal drinking temperature, or for long term wine storage to allow wine to mature, having the following characteristics:
 - (i) capacity to maintain continuously a storage temperature in the range from +5 °C to +20 °C, either pre-set in the compartment or capable of being set by a user, according to the manufacturer's instruction;
 - (ii) capacity to maintain each storage temperature within a variation over time of less than 0,5 K at each declared ambient temperature specified by the climate class for refrigerating appliances (in Table 6)
 - (iii) active or passive control of the compartment humidity in the range 50-80%;
 - (iv) construction to reduce the transmission of vibration to the compartment, whether from the refrigerator compressor or from any external source.
- (t) "multi-use compartment" means a compartment intended for use at two or more of the temperatures of the compartment types and capable of being set by a user to continuously maintain the operating temperature range applicable to each compartment type according to the manufacturer's instructions;

where a feature can shift temperatures in a compartment to a different operating temperature range for a period of limited duration only (such as a fast freeze facility) that feature does not qualify the compartment as multi-use.

- (u) "other compartment" means a compartment intended for the storage of foodstuffs at a temperature warmer than that of a cellar compartment;
- (v) "two-star section" means part of a food-freezer or a food-freezer compartment or three-star compartment or three-star frozen-food storage cabinet, which is not self-contained (that is, does not have its own individual access door or lid) and in which the temperature is not warmer than -12 °C;
- (w) "convenience feature" means an enclosure, or a container either fixed or removable by the user in which suitable storage conditions, which may be different from those of the compartment in which it is located, are provided for designated types of foodstuffs; a fixed convenience feature is one which is not intended to be removed;
- (x) "chest freezer", means a food freezer in which either the compartment(s) are accessible from the top or in which top-opening type and upright type compartments are present and where the gross volume of the top-opening type compartment(s) exceeds 75% of the total gross volume of the appliance;
- (y) "top-opening type" or "chest' type", means a refrigerating appliance in which the compartment(s) are accessible from the top or a compartment accessible from the top
- (z) "upright type", means a refrigerating appliance in which the compartment(s) are accessible from the front or a compartment accessible from the front
- (aa) "fast freeze" means a reversible feature or a function to be activated by the user according to the manufacturer's instructions, that decreases the storage temperature of the freezer or the freezer compartment to achieve a faster freezing of unfrozen foodstuffs;
- (bb) "model identifier" means the code, usually alphanumeric, which identifies a specific refrigerating appliance model from other models of the same trade mark or supplier's name.

ANNEX II

Energy efficiency classes of refrigerating appliances

1. The energy efficiency class of a refrigerating appliance shall be determined in accordance with its Energy Efficiency Index as in Table 1. The Energy Efficiency Index (EEI) of a refrigerating appliance shall be determined in accordance with Annex IV.

Table 1: Energy efficiency class of a refrigerating appliance

Energy Efficiency Class	Energy Efficiency Index
A3	$EEI < 15$
A2	$15 \leq EEI < 19$
A1	$19 \leq EEI < 24$
A	$24 \leq EEI < 30$
B	$30 \leq EEI < 42$
C	$42 \leq EEI < 55$
D	$55 \leq EEI < 75$
E	$75 \leq EEI < 95$
F	$95 \leq EEI < 110$
G	$EEI \geq 110$

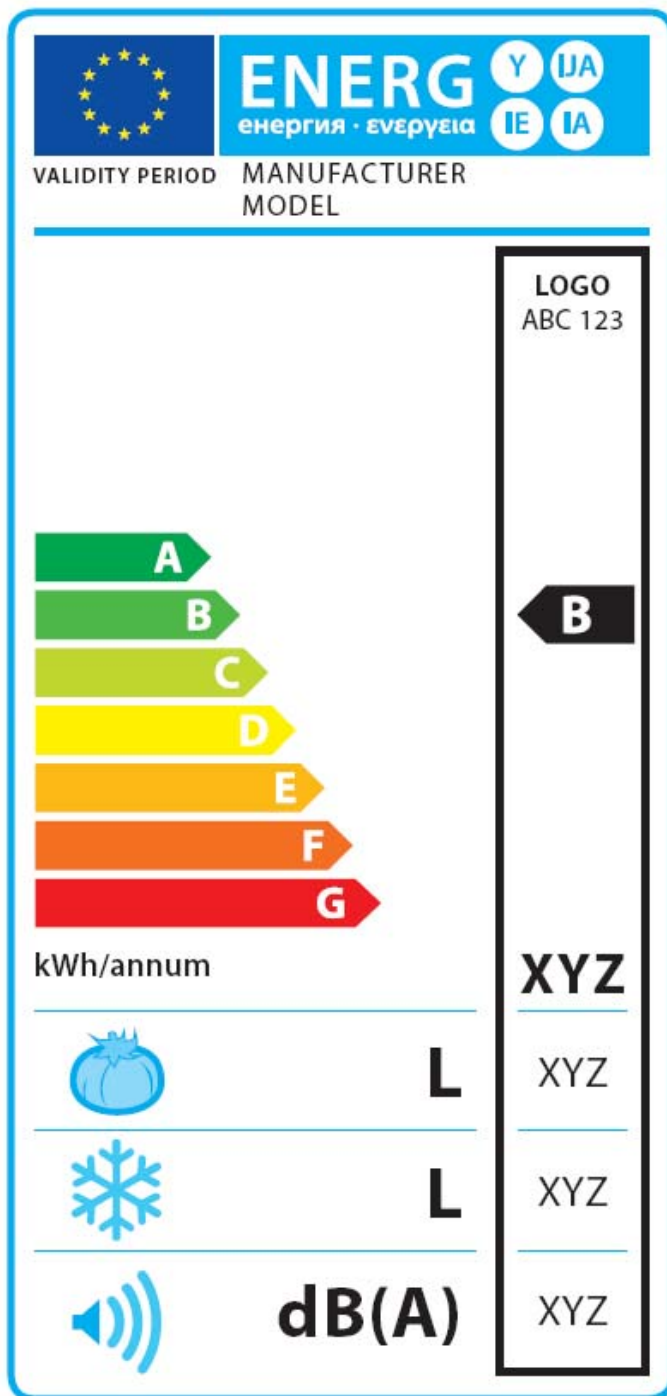
ANNEX III
Format of the label

1. TIMING

- (1) One year after entry into force of this Directive:
 - (a) refrigerating appliances with energy efficiency class "A" or below: the label referred to in Chapters 3 (1) and 4 (1) shall be in accordance with the format set out in Part 2;
 - (b) refrigerating appliances with energy efficiency class "A1": the label referred to in Chapters 3 (1) and 4 (1) shall be in accordance with the format set out in Part 3;
 - (c) refrigerating appliances with energy efficiency class "A2": the label referred to in Chapters 3 (1) and 4 (1) shall be in accordance with the format set out in Part 4;
 - (d) refrigerating appliances with energy efficiency class "A3": the label referred to in Chapters 3 (1) and 4 (1) shall be in accordance with the format set out in Part 5;
 - (e) the validity period of the layout referred to in Part 1, (1), points (a) to (d) shall be indicated as '2010-2012'.
- (2) From 1 January 2013:
 - (a) refrigerating appliances with energy efficiency class "A1" or below: the label referred to in Chapters 3 (1) and 4 (1) shall be in accordance with the format set out in Part 3;
 - (b) refrigerating appliances with energy efficiency class "A2": the label referred to in Chapters 3 (1) and 4 (1) shall be in accordance with the format set out in Part 4;
 - (c) refrigerating appliances with energy efficiency class "A3": the label referred to in Chapters 3 (1) and 4 (1) shall be in accordance with the format set out in Part 5;
 - (d) labels in the format referred to in Part 1, (1) points (a) to (d) shall be deemed to comply with the requirements set out in this Directive until 30 March 2013;
 - (e) the validity period referred to referred to in Part 1, (2), points (a) to (c) shall be indicated as '2013-2016'.
- (3) From 1 January 2017:
 - (a) refrigerating appliances with energy efficiency class "A2" or below: the label referred to in Chapters 3 (1) and 4 (1) shall be in accordance with the format set out in Part 4;
 - (b) refrigerating appliances with energy efficiency class "A3": the label referred to in Chapters 3 (1) and 4 (1) shall be in accordance with the format set out in Part 5;

- (c) labels in the format referred to in Part 1 (2), points (a) to (c) shall be deemed to comply with the requirements set out in this Directive until 30 March 2017;
- (d) the validity period referred to in Part 1, (3) points (a) to (b) shall be indicated as '2017-2020'.

2. LABEL FORMAT UNTIL 31 DECEMBER 2012



I
II
III

IV

V

VI

VII

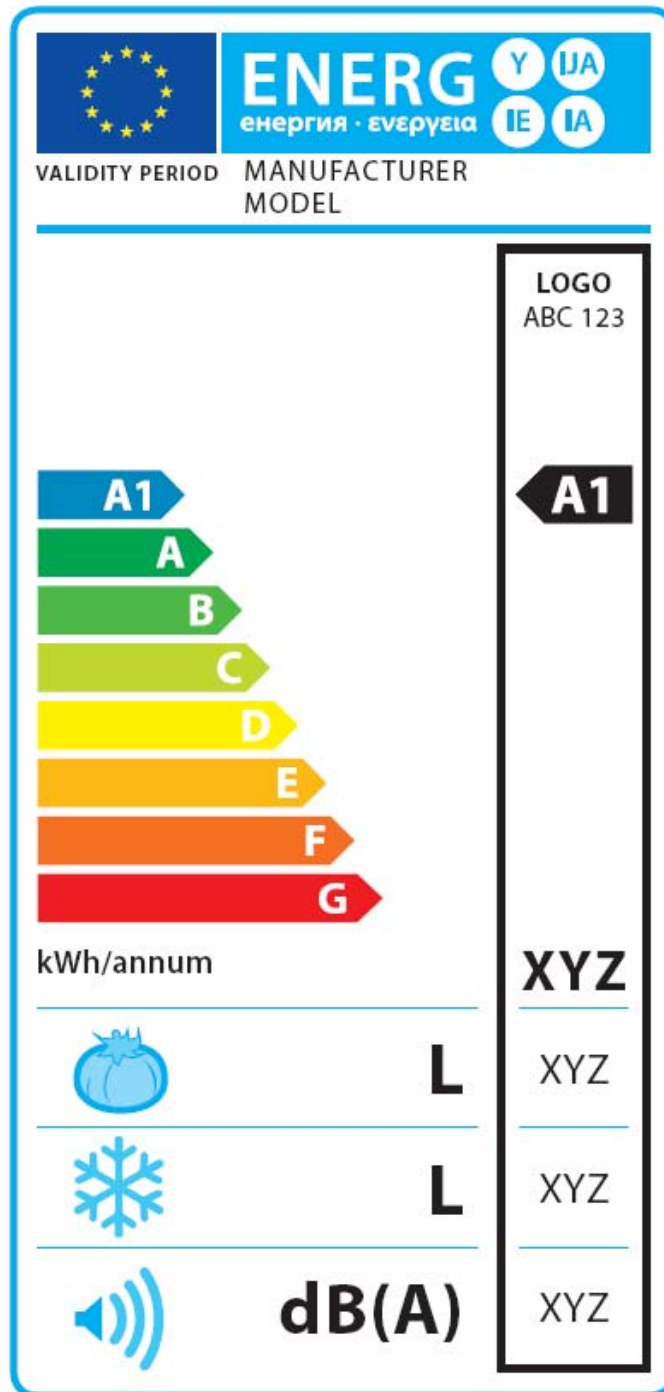
VIII

IX

- (1) The following information shall be included in the label:
- I. supplier's name or trade mark;
 - II. suppliers model identifier;
 - III. period of the validity of the label, expressed as an interval in the range 'year of beginning' and 'year of expiring';
 - IV. the energy efficiency class of the refrigerating appliance, determined in accordance with Annex II; the head of the arrow containing the energy efficiency class of the appliance shall be placed at the same level as the head of the relevant energy efficiency class;
 - V. without prejudice to any requirements under the Community eco-label scheme, where an appliance has been granted a 'European Union eco-label' pursuant to Council Regulation (EEC) No 1980/2000¹ of the European Parliament and of the Council of 17 July 2000 on a revised Community eco-label award scheme, a copy of the eco-label may be added here;
 - VI. energy consumption expressed as Annual Energy Consumption (AC) in kWh per year, rounded to the upper integer;
 - VII. sum of storage volume of all compartments that do not merit a star rating (i.e. operating temperature > -6 °C);
 - VIII. sum of storage volume of all frozen food storage compartments which merit a star rating (i.e. operating temperature ≤ -6 °C);
 - IX. noise expressed in dB(A) re1 pW, rounded to the integer.
- (2) Design aspects of the label are set out in point 6.

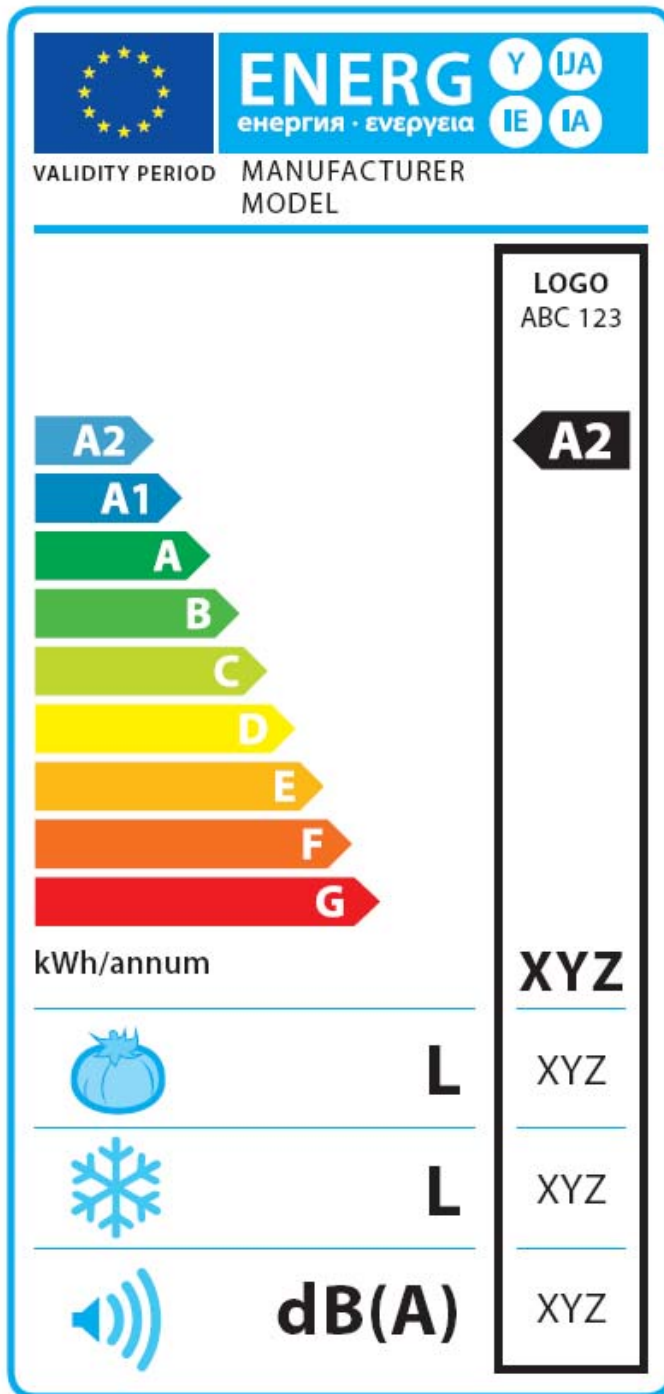
¹ O.J.

3. LABEL FORMAT FROM 1 JANUARY 2013



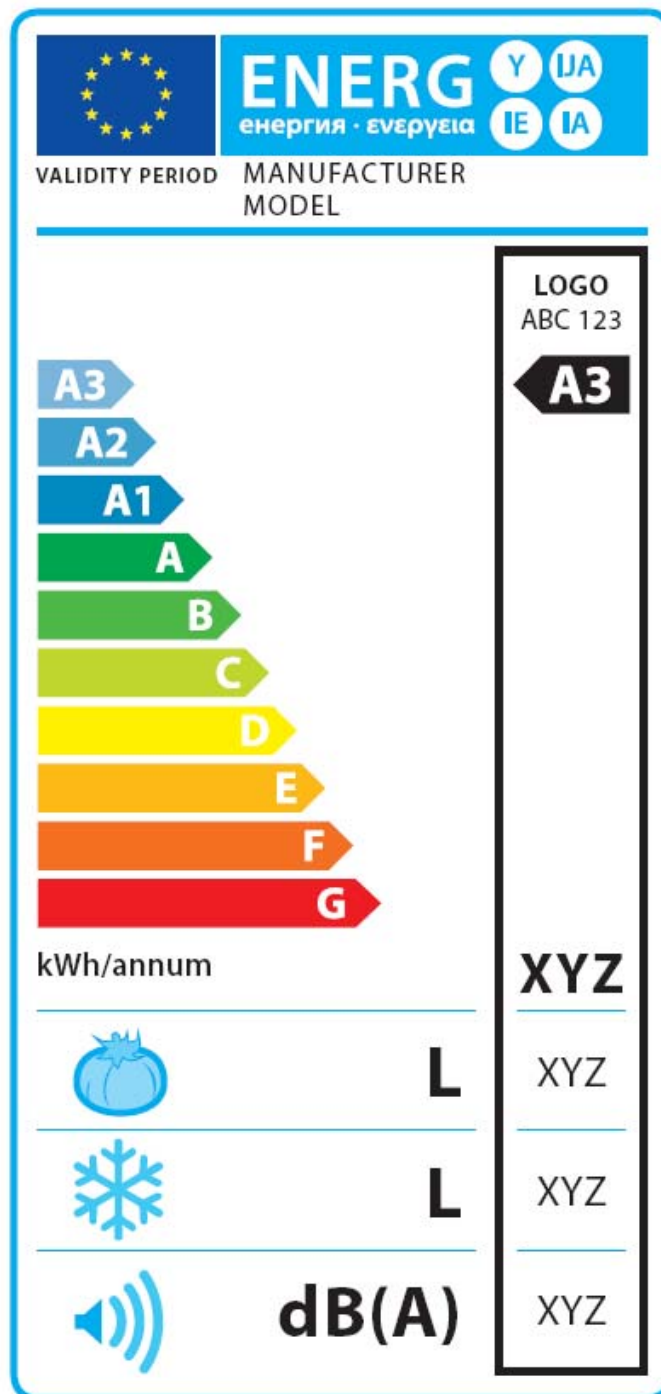
- (1) The information listed in Part 2 (1) applies to this label.
- (2) Design aspects of the label are set out in point 6.

4. LABEL FORMAT FROM 1 JANUARY 2017



- (1) The information listed in Part 2 (1) applies to this label.
- (2) Design aspects of the label are set out in point 6.

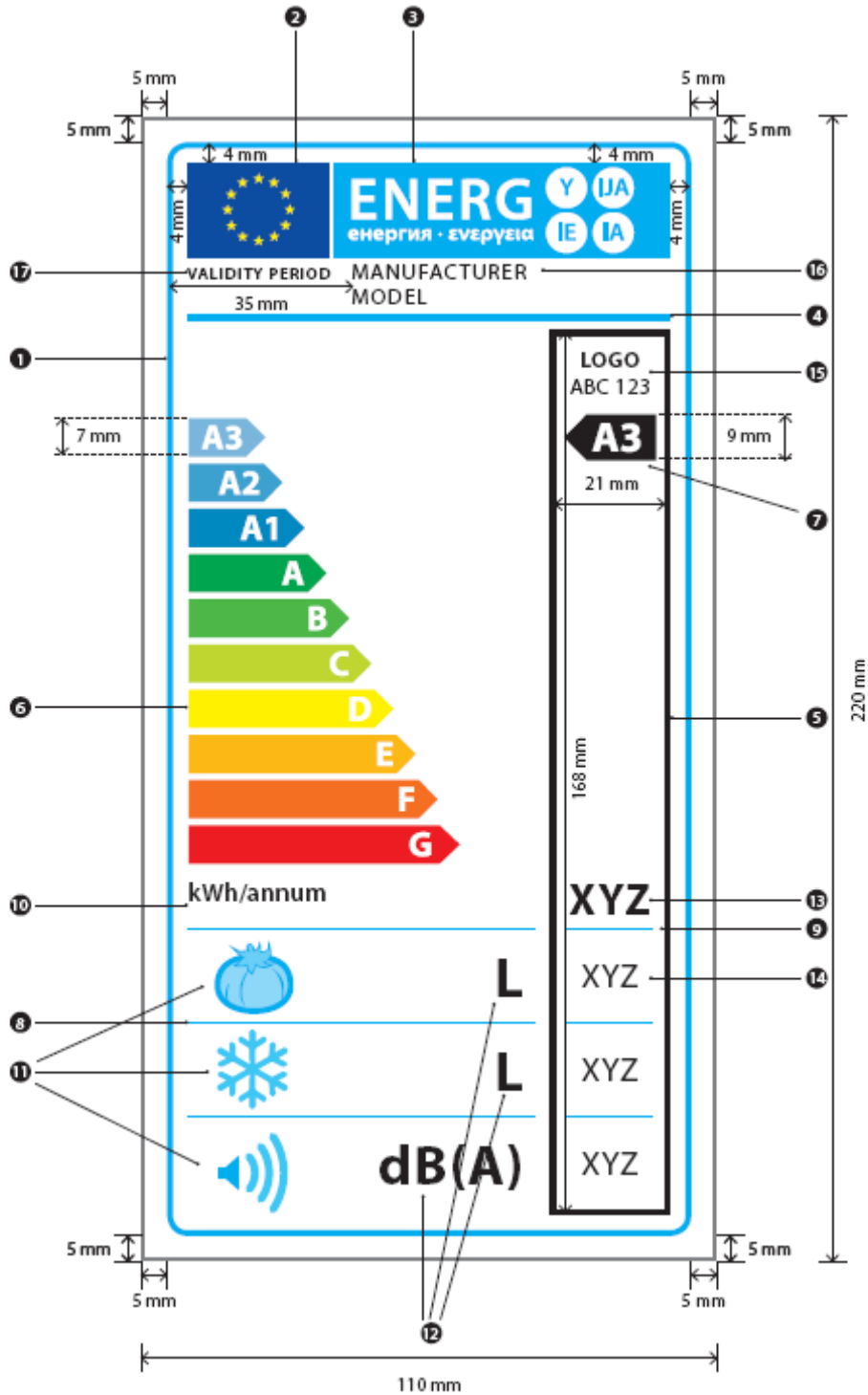
5. LABEL FORMAT FROM FOR REFRIGERATING APPLIANCES WITH ENERGY EFFICIENCY CLASS "A3"



- (1) The information listed in Part 2 (1) applies to this label.
- (2) Design aspects of the label are set out in point 6.

6. PRINTING

- (1) The label must be at least 110 mm wide and 220 mm high. Where the label is printed in a larger format, its content must nevertheless remain proportionate to the specifications above.
- (2) The label must follow the requirements hereafter listed. Numbers refers to the legends indicated below.



Colours are CMYK - cyan, magenta, yellow and black and are given following this example: 00-70-X-00: 0 % cyan, 70 % magenta, 100 % yellow, 0 % black.

- ① **EU label border stroke:** 3 pt – colour: X-00-00-00 – round corners: 3.5 mm.
- ② **EU logo** – colours: X-80-00-00 and 00-00-X-00.
- ③ **Energy label:** colour: X-00-00-00. Pictogram as supplied: EU logo + energy label: width: 92 mm, height: 17 mm.
- ④ **Sub-logos border:** 3 pt – colour: X-00-00-00 – length : 92 mm.
- ⑤ **Frame for the technical data:** stroke: 3 pt, width: 21 mm, height: 168 mm.
- ⑥ **A-G scale**
 - **Arrow:** height: 7 mm, gap: 0.75 mm – colours:
 - A3: X-30-10-00 (50%),
 - A2: X-30-10-00 (70%),
 - A1: X-30-10-00 (100%),
 - A: X-00-X-00,
 - B: 70-00-X-00,
 - C: 30-00-X-00,
 - D: 00-00-X-00,
 - E: 00-30-X-00,
 - F: 00-70-X-00,
 - G: 00-X-X-00.
 - **Text:** Myriad Pro Bold 12, capitals, white.
- ⑦ **Grading**
 - **Arrow:** width: 17 mm, height: 9 mm, 100% black;
 - **Text:** Myriad Pro Bold 14, capitals, white.
- ⑧ **Separation lines:** 0.5 pt – colour: X-00-00-00 – length: 66 mm.
- ⑨ **Short separation lines:** 0.5 pt – colour: X-00-00-00 – length: 16 mm.
- ⑩ **Text about energy consumption,:**
 - **first line:** Myriad Pro semibold 14 pt, 100% black.
 - **second line:** Myriad Pro light 12 pt, 100% black.
- ⑪ **Pictograms as supplied:** 15x15mm
- ⑫ **Food volume and value of noise text:** Myriad Pro semibold and regular 14 pt, 100% black.
- ⑬ **Energy consumption:** Myriad Pro bold 14 pt, 100% black.
- ⑭ **Food volume and value of noise data:** Myriad Pro regular 14 pt, 100% black.
- ⑮ **Further information:** Myriad Pro light 8,5 pt, 100% black.
- ⑯ **Manufacturer and model**
- ⑰ **Validity period:** Myriad Pro semibold 9 pt, 100% black.

The background must be white.

ANNEX IV
Method for calculating the Energy Efficiency Index

The energy consumption of a refrigerating appliance depends on its category and climate class, its volume and construction characteristics (thickness of insulation, compressor efficiency, defrosting characteristics, etc.).

In setting minimum energy efficiency requirements, allowances must therefore be made for the main endogenous factors which influence energy consumption.

For this reason, energy consumption is established by a linear equation which is based on the volume of the appliance, with different equations laid down for each category of appliance. To calculate the maximum allowable EEI of a given appliance, it must therefore first be allocated to the appropriate Category.

The Energy Efficiency Index of a refrigerating appliance is the ratio between its estimated annual energy consumption and the standard annual energy consumption, which is considered as the reference energy consumption of refrigerating appliances.

1. CLASSIFICATION OF REFRIGERATING APPLIANCES

Refrigerating appliances are classified in ten categories and four climate classes as shown in Tables 1 and 2. Refrigerating appliances may be classified in more than one climate classes. Each category is defined by the specific compartment composition as specified in Table 3 and is independent from the number of doors, external drawers and compartments. An external drawer is equivalent to a door.

Table 1: Refrigerating appliances categories

Category	Designation
1	Refrigerator without other compartments
2	Refrigerator-cellar, Cellar and Wine storage appliances
3	Refrigerator-chiller and Refrigerator with a 0 star compartment
4	Refrigerator with a 1 star compartment
5	Refrigerator with a 2 star compartment
6	Refrigerator with a 3 star compartment
7	Refrigerator-freezer
8	Upright freezer
9	Chest freezer
10	Multi-use and other refrigerating appliances

If the compartment(s) temperature does not allow the classification of the appliance in one of the Categories from 1 to 9, or in case of multi-use cabinets, Category 10 shall be selected.

Table 2: Climate classes

Class	Symbol	Ambient average temperature °C
Extended temperate	SN	+ 10 to +32
Temperate	N	+16 to +32
Subtropical	ST	+16 to +38
Tropical	T	+16 to +43

Table 3: Refrigerating appliance classification and relevant compartment composition

Storage temperature range (°C)	> +14	+20 / +5 ^a	+14 / +8	+8 / +3	+3 / -2 °C	< 0 / > -6	< -6	< -12	< -18	< -18	Category (number)	
Nominal temperature (for the EEI) (°C)	Design T	+12	+12	+5	0	0	-6	-12	-18	-18		
Compartments types	Other ^c	Wine storage	Cellar	Fresh food storage	Chill	0star/ Ice making	1 star	2 star	3 star	4 star		
Appliance Category	Compartments composition											
REFRIGERATOR WITHOUT OTHER COMPARTMENTS	N	N	N	Y	N	N	N	N	N	N	N	1
REFRIGERATOR-CELLAR, CELLAR and WINE STORAGE APPLIANCE	O	O	O	Y	N	N	N	N	N	N	2	
	O	O	Y	N	N	N	N	N	N	N		
	N	Y	N	N	N	N	N	N	N	N		
REFRIGERATOR-CHILLER and REFRIGERATOR WITH A 0 STAR COMPARTMENT	O	O	O	Y	Y	O	N	N	N	N	3	
	O	O	O	Y	O	Y	N	N	N	N		
REFRIGERATOR WITH A 1 STAR COMPARTMENT	O	O	O	Y	O	O	Y	N	N	N	4	
REFRIGERATOR WITH A 2 STAR COMPARTMENT	O	O	O	Y	O	O	O	Y	N	N	5	
REFRIGERATOR WITH A 3 STAR COMPARTMENT	O	O	O	Y	O	O	O	O	Y	N	6	
REFRIGERATOR-FREEZER	O	O	O	Y	O	O	O	O	O	Y	7	
UPRIGHT FREEZER	N	N	N	N	N	N	N	O	(Y) ^b	Y	8	
CHEST FREEZER	N	N	N	N	N	N	N	O	N	Y	9	
MULTI-USE AND OTHER APPLIANCES	O	O	O	O	O	O	O	O	O	O	10	

Notes:

Y = the compartment shall be present; N = the compartment shall not be present; O = the compartment presence is optional;

a) the allowed variation of the storage temperature for wine storage compartments is $\pm 0,5K$ of each storage temperature included in the range +5/+20;

b) includes also the three-star frozen food cabinets;

c) "Other compartment" includes any compartment, other than a wine storage one, with a storage temperature higher than +14°C.

The refrigerating appliance shall be capable of maintaining, simultaneously, the required storage temperatures in the different compartments and the permitted temperature deviations (during the defrost cycle) as defined in Table 4 for the different types of refrigerating appliances and for the appropriate climate classes.

Multi-use appliances and/or compartments shall be capable of maintaining the required storage temperatures of the different compartments' types capable of being set by the user according to the manufacturer's instructions.

Table 4: Storage temperatures

Storage temperatures (°C)							
Other compartment	Wine storage compartment	Cellar compartment	Fresh food storage compartment	Chill compartment	One-star compartment	Two-star compartment/section	Food freezer and three-star compartment /cabinet
t_{om}	t_{wma}	t_{cm}	t_{ma}	t_{cc}	t^*	t^{**}	t^{***}
$>+14$	$+5 \leq t_{cm} \leq +20$	$+8 \leq t_{cm} \leq +14$	$\leq +4$	$-2 \leq t_{cc} \leq +3$	≤ -6	$\leq -12^a$	$\leq -18^a$

- t_{ma} : mean storage temperature of the fresh-food compartment
- t^* , t^{**} , t^{***} : maximum temperatures of the frozen-food storage compartments
- t_{cm} : mean storage temperature of the cellar compartment
- t_{cc} : instantaneous storage temperature of the chill compartment
- t_{wma} : mean storage temperature of the wine storage compartment with a variation of $\pm 0,5K$
- t_{om} : mean storage temperature of the other compartment
- No specific storage temperature is requested for the ice making compartment and for the “0 star” compartment, but storage temperature shall be < 0 °C
- a) permitted temperature deviations during the defrost cycle: a rise of no more than 3 K during a period that 4 hours or 20% of the duration of the operating cycle, whichever is the shorter.

2. CALCULATION OF THE EQUIVALENT VOLUME

Given that refrigerating appliances contain different compartments maintained at different temperatures which have a significant influence on the overall energy consumption, the maximum allowable EEI is based on the Equivalent Volume, which is the weighted sum of the storage volumes of the different compartments.

The equivalent volume of a compartment is the storage volume of the compartment adjusted to compensate for heat loadings on spaces which are at temperatures other than that of fresh food compartment. The equivalent volume of a refrigerating appliance is the sum of the equivalent volumes of all compartments.

To determine the equivalent volume of a compartment, the volume correction factors shall first be determined as described in Tables 4 and 5:

$$\frac{(25 - T_c)}{20}$$

- The thermodynamic correction factor $\frac{(25 - T_c)}{20}$ is the temperature difference between the nominal temperature of a compartment T_c (Table 2) and the ambient temperature under standard test conditions (+25 °C) expressed as a ratio of the same difference for a fresh food compartment at +5 °C. The thermodynamic factors for the compartments described in Annex 1, points (n) to (r) are as in following Table 4:

Table 5: Thermodynamic factors for refrigerating appliance compartments

Compartment	Nominal temperature	$(25-T_c/20)$
Other compartment	design temperature	$\frac{(25-T_c)}{20}$
Cellar compartment/ Wine storage compartment	+12 °C	0,65
Fresh food storage compartment	+5 °C	1,00
Chill compartment	0 °C	1,25
Ice making compartment and 0-star compartment	0 °C	1,25
One-star compartment	-6 °C	1,55
Two-star compartment	-12 °C	1,85
Three-star compartment	-18 °C	2,15
Food freezer compartment (four-star compartment)	-18 °C	2,15

Notes:

- i) for multi-use compartments, the thermodynamic factor shall be determined by the nominal temperature of the coldest compartment type capable of being set by a user and maintained continuously according to the manufacturer's instructions;
- ii) for any two-star section (within a freezer) the thermodynamic factor shall be determined considering a temperature of -12 °C;
- iii) for other compartments the thermodynamic factor shall be determined by the coldest nominal temperature capable of being set by a user and maintained continuously according to the manufacturer's instructions.

Table 6: Value of the correction factors

Correction factor	Value	Conditions
FF (Frost-free)	1,2	for Frost-free (ventilated) frozen food compartments
	1	otherwise
CC (climate class)	1,2	for T class (tropical) appliances
	1,1	for ST class (subtropical) appliances
	1	otherwise
BI (built-in)	1,2	for built-in appliances of under 58 cm in width
	1	otherwise

Notes:

- i) FF is the volume correction factor for the presence of a 'no frost' function;
- ii) CC is the volume correction factor for the presence of a given climate class. If a refrigerating appliance is classified into more than one climate class, the climate class with the highest correction factor is used for the calculation of the equivalent volume.
- iii) BI is the volume correction factor for built in appliances.

The refrigerating appliance equivalent volume, in litre and rounded to the first integer, is then calculated as:

$$V_{eq} = \left[\sum_{c=1}^{c=n} V_c \times \frac{(25 - T_c)}{20} \times FF_c \right] \times CC \times BI$$

where

n is the number of compartment

V_c is the storage volume of the compartment

T_c is the nominal temperature of the compartment in Table 2.

3. CALCULATION OF THE ENERGY EFFICIENCY INDEX

For the calculation of the EEI, the energy consumption of any given appliance is compared to the reference energy consumption of the same category of appliance with an identical equivalent volume.

The Energy Efficiency Index is calculated as:

$$EEI = \frac{AC}{SC} \times 100$$

and is rounded to the first decimal place

where:

- AC = annual energy consumption of the refrigerating appliance
- SC = standard annual energy consumption of the refrigerating appliance.

The Annual Energy Consumption AC of a refrigerating appliance is calculated, in kWh/year and rounded to two decimal places, as:

$$AC = E_{24h} \times 365$$

where E_{24h} is the energy consumption of the refrigerating appliance in kWh/24h and rounded to three decimal places.

The Standard Annual Energy Consumption SC of a refrigerating appliance is calculated, in kWh/year and rounded to two decimal places, as:

$$SC = V_{eq} \times M + N + CH$$

where:

- V_{eq} is the equivalent volume of the refrigerating appliance
- CH is an allowance equal to 50 kWh/year given to appliances with a chill compartment of at least 15 litres
- M and N values depend from the appliance category as in following Table 6:

Table 7: M and N values by appliance category

Category	M	N
1	0,233	245
2	0,233	245
3	0,233	245
4	0,643	191
5	0,450	245
6	0,777	303
7	0,777	303
8	0,539	315
9	0,472	286
10	a	a

^a for Category 10 refrigerating appliances the M and N values depend on the temperature and the star rating of the compartment with the lowest storage temperature capable of being set by a user and maintained continuously according to the manufacturer's instructions. When only other compartment as defined in Table 3 is present, M and N values for Category 1 shall apply.

ANNEX V
TERMS TO BE USED IN LABEL, FICHE and MAIL ORDER and OTHER DISTANT SELLING

Equivalents in Community languages of the terms to be used:

Label in Annex III	Fiche in Annex VI	Mail order and other distant selling in Annex VIII	ES	EN	FR ...
I	1(a)			supplier's name	
II	1(b)			model	
VI				energy consumption kWh/year	
VII				fresh food volume (litre)	
VIII				frozen food volume (litre)	
IX	1(n)	1(f)		noise dB(A) re 1pW	
X				further information is contained in product brochures	
	1(c)			category	
	1(d)	1(a)		energy efficiency class on a scale from A3 (more efficient) to G (less efficient)	
	1(e)			European Union eco-label	
	1(f)	1(b)		Energy consumption 'XYZ' kWh per year, based on standard test results for 24 h. Actual energy consumption will depend on how the appliance is used and where it is located.	
	1(g)	1(c)		storage volume	

	1(g)	1(d)		frozen-food storage compartment	
	1(g)			one-star compartment	
	1(g)			two-star compartment	
	1(g)			three-star compartment	
	1(g)			food freezer compartment	
	1(g)			0-star compartment	
	1(h)			design temperature	
	1(i)			frost-free	
	1(j)			power cut safe Z h	
	1(k)			freezing capacity	
	1(l)	1(e)		climate class	
		1(g)		built-in appliance	
		1(h)		This appliance is intended to be used exclusively for the storage of wine.	

ANNEX VI

The fiche

1. The information in the product fiche shall be given in the order specified below, or given in the description of the refrigerating appliance. One fiche may cover a number of refrigerating appliances models supplied by the same supplier.
 - (a) supplier's name or trade mark;
 - (b) supplier's model identifier as defined in Annex I (aa);
 - (c) category of refrigerating appliance as defined in Annex IV, Point 1;
 - (d) energy efficiency class of the model as defined in Annex II, Table 1, expressed as: 'energy efficiency class on a scale from A3 (most efficient) to G (least efficient)'. Where this information is provided in a table this may be expressed by other means provided it is clear that the energy efficiency scale is from A3 (more efficient) to G
 - (e) where some of the appliances have been granted a 'Community Eco-label award' under Regulation (EEC) No 1980/2000, this information may be included in a table. In this case the row heading shall state 'European Union eco-label' and the entry shall consist of a copy of the eco-label mark. This provision is without prejudice to any requirements under the Community eco-label award scheme;
 - (f) energy consumption expressed as Annual Energy Consumption (AC) as described in Annex III; it shall be described as: 'Energy consumption 'XYZ' kWh per year, based on standard test results for 24 h. Actual energy consumption will depend on how the appliance is used and where it is located';
 - (g) storage volume of each compartment and applicable star rating as defined in Annex I (r), if any; the necessary extra lines may be added to include the information in respect of these compartments;
 - (h) the design temperature of 'other compartment(s)' within the meaning of Annex I, point (u), shall be given; for wine storage compartment(s) in wine storage appliances, the coldest storage temperature, either pre-set in the compartment or capable of being set by a user and capable of being maintained continuously according to the manufacturer's instruction, shall be given;
 - (i) the mention 'frost-free' may be included for the relevant compartment(s), when in accordance with the definition set out in Annex I (d);
 - (j) 'power cut safe Z h' defined as 'temperature rise time';
 - (k) 'freezing capacity' in kg/24 h;
 - (l) 'climate class' in accordance with Annex IV, Table 2, and expressed as: 'Climatic class: W [*climatic class*]. This appliance is intended to be used at an ambient temperature between X [*lowest temperature*] °C and Y [*highest temperature*] °C';
 - (m) indications about the combination of drawers, baskets and shelves giving the best appliance energy efficiency;
 - (n) noise expressed in dB(A) re1 pW, rounded to the integer;
 - (o) if the model is produced in order to be built-in, this is to be stated;

- (p) for wine storage appliances, the following information shall be provided: “*This appliance is intended to be used exclusively for the storage of wine*”. This point shall not apply to refrigerating appliances that are not specifically designed for wine storage but that may be nevertheless used for this purpose and to refrigerating appliances that have a wine storage compartment combined with any other compartment type.
2. The information contained in the fiche may be given in the form of a copy of the label, either in colour or in black and white. In this case, the information listed in point 1 which is not already displayed on the label must also be provided.

Annex VII
Technical documentation

- (1) The technical documentation referred to in Chapter 3 (3) shall include:
- (a) the name and address of the supplier;
 - (b) a general description of the refrigerating appliance model, sufficient for it to be unequivocally and easily identified;
 - (c) where appropriate, the references of the harmonised standards applied;
 - (d) where appropriate, the other technical standards and specifications used;
 - (e) identification and signature of the person empowered to bind the supplier;
 - (f) technical parameters for measurements as follows and established in accordance with Annex IX, Part 3:
 - (i) overall dimensions;
 - (ii) overall space required in use;
 - (iii) total gross volumes(s);
 - (iv) storage volume(s) and total storage volume(s);
 - (v) defrosting type;
 - (vi) storage temperature;
 - (vii) energy consumption;
 - (viii) temperature rise;
 - (ix) freezing capacity;
 - (x) power consumption;
 - (xi) wine storage compartment humidity;
 - (g) the results of calculations performed under Annex IV.
- (2) Where the information included in the technical documentation file for a particular refrigerating appliance model has been obtained by calculation on the basis of design, and/or extrapolation from other equivalent refrigerating appliances, the documentation shall include details of such calculations and/or extrapolations, and of tests undertaken by suppliers to verify the accuracy of the calculations undertaken (details of mathematical model for calculating performance and of measurements taken to verify this model). Information shall also include a list of all other equivalent refrigerating appliance models whose information has been obtained on the same basis.

ANNEX VIII
Mail order and other distance selling

1. Information referred to in Chapter 4 (4), must be provided in the following order:
 - a) energy efficiency class of the model as defined in Annex II;
 - b) energy consumption as defined in Annex VI, point 1 (f);
 - c) storage volume of each compartment as defined in Annex VI, point 1 (g);
 - d) star rating of frozen food compartments as defined in Annex VI, point 1 (g);
 - e) 'climate class' as defined in Annex VI, point 1 (l);
 - f) noise as defined in Annex VI, point 1 (n);
 - g) if the model is produced in order to be built-in, this must be stated;
 - h) for wine storage appliances the following information shall be provided: 'This appliance is intended to be used exclusively for the storage of wine'. This point shall not apply to refrigerating appliances that are not specifically designed for wine storage but that may be nevertheless used for this purpose and to refrigerating appliances that have a wine storage compartment combined with any other compartment type.
2. Where other information contained in the product information fiche is also provided, it shall be in the form and order specified in Annex VI.
3. The size and font, in which all the information referred in this Annex is printed, shall be legible.

ANNEX IX
Measurements

For the purposes of compliance and verification of compliance with the requirements of this Regulation, measurements shall be made using a reliable, accurate and reproducible measurement procedure, which takes into account the generally recognised state of the art measurement methods. They shall fulfil all of the following conditions.

1. TEST PROCEDURE AND MEASUREMENT ACCURACY

Measurements shall be made within the accuracy prescribed in Table 1.

Table 1

Measured parameter	Measurement accuracy
Rated gross volume	The measured value shall not be less than the rated value by more than 3 % or 1 l, whichever is the greater value.
Rated storage volume	The measured value shall not be less than the rated value by more than 3% or 1 l, whichever is the greater value. Where the volumes of the cellar compartment and fresh food storage compartment are adjustable, relative to one another by the user, this measurement uncertainty applies when the cellar compartment is adjusted to its minimum volume.
Freezing capacity	The measured value shall not be less than the rated value by more than 10 %.
Energy consumption	The measured value shall not be greater than the rated value (E_{24h}) by more than 10 %.
Wine storage appliances	The value measured for the relative humidity shall not exceed the nominal range by more than 10 %.

2. GENERAL CONDITIONS FOR TESTING:

The following general conditions for testing apply:

- (1) if anti-condensation heaters which can be switched on and off by the user are provided, they shall be switched on and - if adjustable - set at maximum heating;
- (2) if 'through the door devices' (such as ice or chilled water/drinks dispenser) which can be switched on and off by the user are provided, they shall be switched on during the energy consumption measurement but not operated;
- (3) for multi-use appliances and compartments, the storage temperature during the measurement of the energy consumption shall be taken as the coldest compartment type nominal temperature claimed for continuous normal use according to the manufacturer's instructions;
- (4) the energy consumption of a refrigerating appliance shall be determined in the coldest configuration, according to the manufacturer's instruction for continuous normal use for any 'other compartment' as defined in Annex I, point (u).

3. TECHNICAL PARAMETERS

The parameters below shall be established as indicated:

- (a) "overall dimensions" which are the height, width and depth of the rectangular parallelepiped, whose base is horizontal, of the refrigerating appliance so as to include the complete appliance except for the handle - the protrusion of which, if any, is to be specified separately;
linear dimensions are measured to the nearest millimetre;
- (b) "overall space required in use", which is the height, width and depth, including the handle, and the space necessary for free circulation of the cooling air when the refrigerating appliance is in service, plus the space necessary to allow for the opening of the means of access to that minimum angle which enable the removal of all removable parts such as containers and shelves, including a drip tray that has to be removed and any water that has to be emptied manually;
linear dimensions are measured to the nearest millimetre;
- (c) "total gross volumes(s)", which is calculated by dividing the total volume into convenient units of volumes of geometric shapes, which can easily be measured; when the gross volume is determined, internal fittings such as shelves, removable partitions, containers, evaporators, temperature control devices and interior light housings shall not be included in that measurement; however, the gross volume shall take into account the exact shapes of the walls if they contain depressions or projections;
calculated volume is measured to the nearest whole number of cubic decimetres or of litres;
- (d) "storage volume(s) and total storage volume(s)", which is the sum of the storage volumes of all compartments, including two-star section(s), as applicable; for the determination of storage volumes, the total volume of devices and spaces considered unusable for the storage of food is deducted from the gross volume;

calculated volume is measured to the nearest whole number of cubic decimetres or of litres;

- (e) "defrosting type", which is the way the frost is eliminated from the refrigerating appliance; it is assessed for each compartment, except for frost-free refrigerating appliances; possible defrosting types include automatic defrost, semi-automatic defrost, manual defrost (with automatic or manual removal of the defrost water) and adaptive defrost;
- (f) "storage temperature", which is the storage temperature of each compartment type in accordance with Annex III, Table 4, to be maintained simultaneously and within the temperature deviations (during the defrost cycle) given in that Table in all the compartments of the refrigerating appliance for the relevant climate class;
- g) "energy consumption" which is the electric energy (in kilowatt hour) consumed by the refrigerating appliance in the unit of time. The energy consumption is either measured per 24h, or it is calculated for a period of exactly 24h from measured values, and is expressed in kilowatt hours per 24 h (kWh/24h), to three decimal places;
- (h) "temperature rise", which is the time needed for the temperature to rise from -18°C to -9°C in a frozen-food storage cabinet or compartment, or food freezer cabinet or three-star compartment;
- (i) "freezing capacity", which is the mass which can be frozen to a temperature of -18°C in 24 hours in food freezers and food freezer compartments according to manufacturer's instructions, without affecting the storage temperature of other compartments within the meaning of Annex IV, Table 4;
- (j) "power consumption": power consumption data is measured in Watts rounded to two decimal places;
- (k) "wine storage compartment humidity": the relative humidity of each compartment is measured and expressed as percentage rounded to the integer.

ANNEX X

Verification procedure for market surveillance purposes

For the purposes of checking conformity with the requirements laid down in Chapters (3) and (4), Member States authorities shall test a single refrigerating appliance. If the measured parameters do not meet the declared values of the supplier within the range defined in Annex IX, table 1, the measurements shall be made on three more refrigerating appliances. The arithmetical mean of the measured values of these three refrigerating appliances shall meet the requirements within the range defined in table 1.

Otherwise, the model and all other equivalent refrigerating appliance models as defined in Chapter 2 (10) shall be considered not to comply.

In addition to the procedure set out in Annex IX, Member States shall use accurate and reliable state-of-the-art measurement methods which deliver reproducible results, including:

- where available, harmonised standards the reference number of which have been published for that purpose in the Official Journal of the European Union in accordance with Articles 9 and 10 of Directive 2005/32/EC;
- otherwise, the methods described in the documents listed in Table 1.

Table 1

Measured parameter	Organisation	Reference	Title
Terms and symbols	Cen/Cenelec	Clause 3 of EN 153 (Clause 3 of EN ISO 15502:2005)	Methods of measuring the energy consumption of electric mains operated household refrigerators, frozen food storage cabinets, food freezers and their combinations, together with associated characteristics
Refrigerator-freezers having one or more, user-adjustable temperature control devices	Cen/Cenelec	Clause 4.2 of EN ISO 15502:2005	Household refrigerating appliances. Characteristics and test methods
Collection and disposal of defrost water	Cen/Cenelec	Clause 5 of EN 153 (Clause 5.6 of EN ISO 15502:2005)	Methods of measuring the energy consumption of electric mains operated household refrigerators, frozen food storage cabinets, food freezers and their combinations, together with associated characteristics
Storage temperatures	Cen/Cenelec	Clause 6 of EN 153 (Clauses 6 of EN ISO 15502:2005), where in contrast Table 4 in Annex IV shall prevail	
Determination of linear dimensions, volumes and areas	Cen/Cenelec	Clause 7 of EN 153 (Clause 7 of EN ISO 15502:2005)	
General test conditions	Cen/Cenelec	Clause 8 of EN 153, where in contrast conditions set in part b) of this Annex shall prevail	
Storage temperatures	Cen/Cenelec	Clause 13 of EN 153 (Clause 13 of EN ISO 15502:2005)	
Energy consumption	Cen/Cenelec	Clause 15 of EN 153	
Temperature rise	Cen/Cenelec	Clause 16 of EN 153 (Clause 16 of EN ISO 15502:2005)	
Freezing capacity	Cen/Cenelec	Clause 17 of EN 153 (Clause 17 of EN ISO 15502:2005)	

Final test report	Cen/Cenelec	Clause 19 of EN 153, where in contrast the definitions and rounding indications of Annex IX, Part 3 shall prevail	
Built-in refrigerating appliances	Cen/Cenelec	Annex D of EN 153	
Rated characteristics and control procedure	Cen/Cenelec	Annex E of EN 153	
Element for the test Report Marking	Cen/Cenelec	Clauses 20 and 21 of EN 153 (Clause 20 and Clause 21.2, 21.2, 21.3 and 21.4 of EN ISO 15502:2005)	Household refrigerating appliances. Characteristics and test methods
Noise	International Electro-technical Commission	prEN 60704-2-14 (IEC 60704-2-14:2007)	Refrigerators, frozen-food storage cabinets and food freezers for household and similar use – Measurement of emission of airborne acoustical noise
Power consumption	European Commission	Regulation (EC) No .../.. of [...]	Commission Regulation (EC) No .../.. of [...] implementing Directive 2005/32/EC of the European Parliament and of the Council with regard to ecodesign requirements for standby and off mode electric power consumption of electrical and electronic household and office equipment

The measurement method for wine storage appliances is as follows.

Wine storage performance characteristics

The storage temperature T_{wma} of each compartment shall be included in the range +5°C-+20°C.

T_{wma} is calculated as the average of the temperatures T_{wm1} , T_{wm2} and T_{wm3} of the 3 M-packages (of 500g) to be used in each wine storage compartment:

$$T_{wma} = \frac{T_{wm1} + T_{wm2} + T_{wm3}}{3}$$

The position of the M-packages shall be as in Figure 1.

Each storage temperature shall be maintained within a variation of less than 0,5 Kelvin at each declared ambient temperature specified by the climate class defined for refrigerating appliances in Table 2 of Annex IV.

Energy consumption measurement

The energy consumption E_{24h} shall be measured at $T_{wma} = 12^{\circ}\text{C}$. In case interpolation from more than one measurement is used, the procedure set in the table 2 under the title “Energy consumption” applies.

The energy consumption E_{24h} to be used for the calculation of the annual energy consumption AC to be declared shall be measured at the coldest storage temperature T_{wma} in the range from $+5^{\circ}\text{C}$ to $+20^{\circ}\text{C}$, either pre-set in the compartment or capable of being set by a user and capable of being maintained continuously, according to the manufacturer’s instruction.

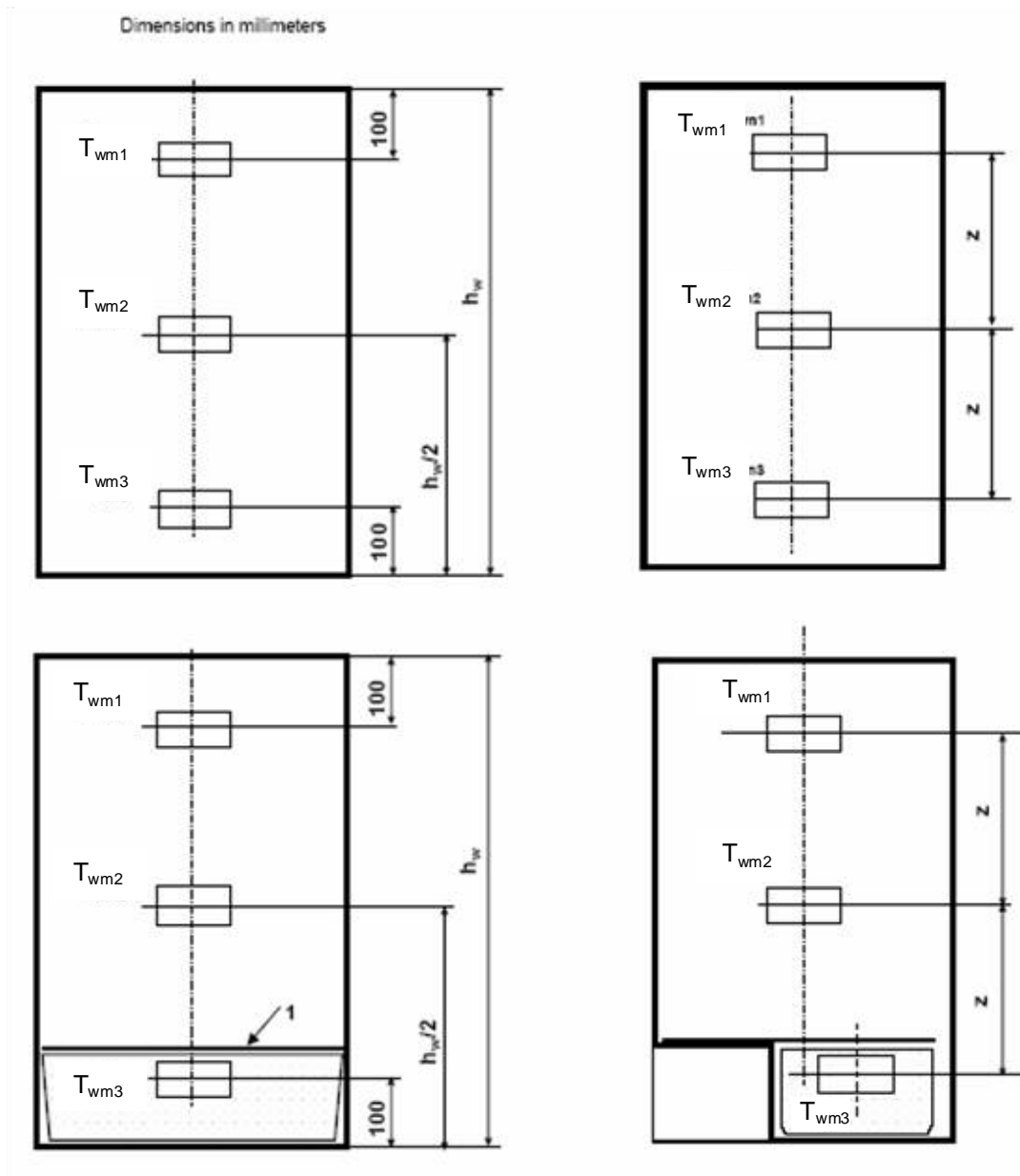
Humidity measurement

The relative humidity of wine storage appliances is measured as follows:

- the relative humidity H_{wm} of each compartment shall be included in the range $+50\%$ - $+80\%$.
- H_{wm} is measured by using a humidity sensor placed in the same position as the temperature measurement point T_{wm2} in Figure 1
- For wine storage compartments closed with one door but split by fix or adjustable dividers in separate sub-compartments with independent temperature control the humidity measurement applies for each sub-compartment.
- If $z < 100$ mm (Figure 1), H_{wm} is not measured for the compartment or the sub-compartment.

The relative humidity is expressed as percentage rounded to the integer in accordance with Annex IX, Part 3, point (k).

Figure 1: position of the M-packages for the evaluation of the storage temperature T_{wma} in wine storage compartments



Note:

¹shelf above a container placed at lowest possible position

- Temperature measurement points T_{wm} relative to height h_w and internal fittings
- For wine storage compartments closed with one door but split by fix or adjustable dividers in separate sub-compartments with independent temperature control the arrangement applies for each sub compartment.
- If $z < 100$ mm, T_{wm2} shall not be used
- If $h_w < 300$ mm only T_{wm2} shall be used