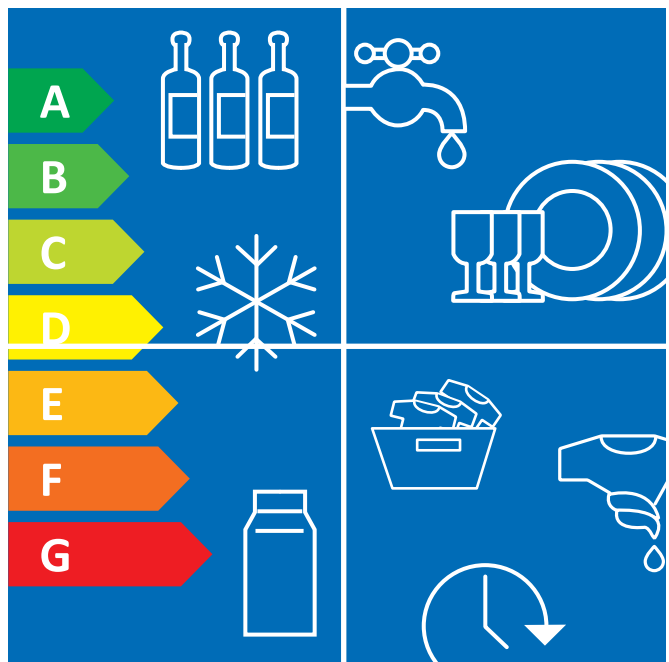


As of 1st March 2021:

The new energy label

Washing machines, washer-dryers,
dishwashers, refrigerators



November 2019

Large Domestic Electrical Appliances Division



Die Elektroindustrie

The new energy label

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Any use beyond the strict limits of copyright law without the permission of the publisher is prohibited. This applies in particular to the copying, translating, microfilming and storage on electronic systems. Given the volume of the relevant EU regulations, this brochure can only offer an overview of the new labels for household appliances and explain the most important changes, deadlines and obligations for those active in the market. It does not claim to be complete. Professional users are advised to study the relevant regulations.

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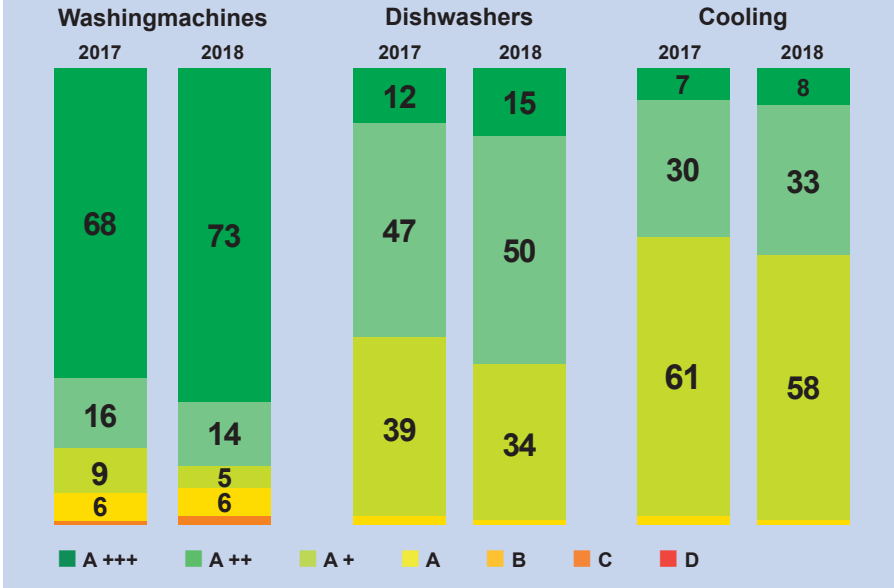
After 25 years of energy labelling: Reform triggers substantial changes

Ever since the mid-nineties, the European Energy Label has promoted competition in the field of energy-efficient large household appliances. Over the same time period, ecodesign regulations have led to gradual bans for low-efficiency appliances. This in turn pushed technological developments, which quickly resulted in a high concentration of offers at the top of the efficiency scale. This meant that the labels no longer offered sufficient differentiation and served less and less to support the

buyer’s decision-making process. Therefore, in 2003 the EU Commission added three plus classes for refrigerators and freezers. The first fundamental reform of the energy label in 2010 finally allowed the plus classes to be applied to all product groups (Framework Directive 2010/30/EU).

Fig. 1: Share of energy efficiency categories in the market, Europe 2017-2018

(GfK Panelmarket 22 countries EU, Jan 17–Dec 18, sales units%)



Source: GfK Retail and Technology

Now we are facing the next major reform of the energy labelling framework, which the EU Commission started preparing for in 2017. The Framework Directive EU/2017/1369 outlines the fundamental procedures for the introduction and rescaling of the new energy labels. The exact requirements will be determined in stages in separate delegated acts relevant for specific product groups.

This reform brings with it substantial changes; of particular note is that there are no more plus classes and thus a return to the original efficiency scale from A to G. Suppliers, dealers and customers will have to adapt. Furthermore, in contrast to the 2010 reform there is a fixed deadline and a very brief transition period for changing to the new label.

Please note: The obligations are addressed to 'suppliers' and/or 'dealers'. These are defined in the Framework Regulation EU 2017/1369. 'Supplier means a manufacturer established in the Union, the authorised representative of a manufacturer who is not established in the Union, or an importer who places a product on the Union market. Dealer means a retailer or other natural or legal person who offers for sale, hire, or hire purchase, or displays products to customers or installers in the course of a commercial activity, whether or not in return for payment.'

Deadline 1st March 2021: re-labelling is required

The first new labels for household appliances are those for washing machines, washer-dryers, dishwashers, refrigerators/freezers and wine storage appliances. For the time being, the situations and requirements described herein apply only to these appliances. The relevant legal instruments for these product groups have already been formally adopted by the EU and are scheduled for publication in the Official Journal of the EU on 5th December 2019

The important deadline is 1st March 2021. Only as of this date will customers be able to see the new labels, whether in shops or online. Until then, the regulations for the currently applicable labels remain in force in their entirety.

As of this date, dealers have 14 working days to change the labels in the shops and for products offered online.

Important: Before 1st March 2021, dealers are not allowed to use the new labels for the products they are offering. This is specifically set forth in the Framework Regulation.

In order to enable dealers to comply with their re-labelling obligations, suppliers have to provide both the current and the new label for any appliances that are placed on the market four months prior to the abovementioned deadline, i.e. as of 1st November 2020. Dealers should take care to store these labels so that they can mark the appliances as of 1st March 2021 accordingly.

Older appliances also need to be re-labelled. Therefore, suppliers will have to provide, as of 1st November 2020 and on request by the dealers, new labels also for those appliances that are placed on the market prior to this date. However, there is one exception to this: in the case of appliances that will not be placed on the market after 1st November 2020 and subject to specific circumstances, the supplier is not obliged to provide the new label. In such cases, the dealer may only sell the appliance in question until the 30th November 2021, with the old label.

No more plus classes – requires re-thinking

The biggest change triggered by the new energy labels is that there are no more plus classes, resulting in a re-scaling of all appliances offered in the EU. In order to maintain regulation stability of these labels for as long as possible – target period is a minimum of ten years – the EU Framework Regulation EU/2017/1369 stipulates that the product-specific efficiency classes should be created in such a way that ‘no products are expected to fall in energy class A at the moment of introduction of the label.’ The new energy classes for washing machines, washer-dryers, dishwashers, refrigerators/freezers and wine storage appliances are indeed quite demanding and will result in a substantial re-scaling.

Therefore, the EU stipulation that ‘no products are expected to fall in energy class A at the moment of introduction of the label’ may become a reality in March 2021. At the same time, all other classes from B to G may well be populated.

There are no procedures for converting the current energy classes to the new ones. This is because the new labels are accompanied by new methods for measuring the energy consumption and for determining the label class. The EU stipulates that the relevant methods and standards should, ‘take into account the real-life usage of a given product, and reflect average consumer behaviour’.

By eliminating the plus classes, the EU intends to make the energy label more transparent and more economically viable for the consumer. However, before that can happen, a lot needs to be communicated to the consumer. The new regulations applicable as of March 2021 have to be explained: there will probably be no appliances of the above-mentioned product groups in the A category, highly efficient appliances will be found in presently unfamiliar categories B or C and there will still be labels with plus classes for tumble-dryers, ovens and cooker hoods.

Further obligations for suppliers and dealers

Besides the above-mentioned obligation to provide the labels, suppliers have to furnish electronic product information sheets. The EPREL data base (see chapter below) offers these, as well as the labels, for downloading. The data must be entered into the data base by the suppliers of the appliances. The EU has decided that for environmental reasons, printed information sheets only have to be provided upon specific request by the dealer. This will already apply for the currently applicable information sheets as of the entering into force of the new labelling regulations. The suppliers are

responsible for providing correct labels and product information sheets, and they must create technical documents for the supervisory authorities and upload them to the EPREL data base for verification purposes.

As is currently the case, dealers have to label the appliances on display in their shops. Of course, labels and product information sheet also have to be provided for distance selling. The marking of built-in appliances is facilitated. Here, it is sufficient if the label is displayed in such a way to be clearly visible and identifiable as the label belonging to the product in question.

Free-standing appliances will, as is currently the case, have to display the label in a place that is 'clearly visible, on the outside, on the front or top of the appliance'.

Suppliers and dealers continue to be obliged to 'make reference to the energy efficiency class of the product and the range of the efficiency classes available on the label in any visual advertisements, including the Internet, or technical promotional material for a specific model.' There are mandatory symbols for this (see e.g. Annex VII of the regulation for the label dishwasher).

Providers of hosting services who permit the direct sale of appliances via their website have to provide the means to display the electronic labels and product information sheets furnished by the dealer.

The energy label data base EPREL

Apart from introducing new labels, Framework Regulation EU/2017/1369 says that the EU Commission will establish and operate an energy label data base: 'EPREL – European product data-base for energy labelling.'

In doing so, the EU targets two goals. Firstly, the general public should benefit from improved transparency of what is on offer. Secondly, the data base is intended to support market surveillance authorities. As a consequence, the data base has a public part and a compliance part.

The public part provides the label data and the product information sheets for viewing and downloading for all appliances that require labelling. Access to the data base is via the Internet or directly via the energy label. Every new energy label has a QR code in the upper right corner, which is linked to the relevant product in the data base.

The compliance part of the data base contains technical information and information that is relevant for verifying conformity. It is accessible only to market surveillance authorities and the EU Commission.

At the beginning of November 2019 the data base was still undergoing final tweaks. At this time there was no official date as to when the general public will be able to access the data base.

Ecodesign brings new product requirements

While the energy label as a marking instrument aims to influence the purchasing decision, the ecodesign regulations stipulate specific product requirements.

Consequently, parallel to the new labels for washing machines, washer-dryers, dishwashers and refrigerating appliances, new ecodesign regulations are being adopted and will also be published in the Official Journal of the EU on 5th December 2019. The measures will be implemented in stages, with the deadlines 1st March 2021 and 1st March 2024.

As before, there will be specific requirements regarding the performance, for example the washing and rinsing efficiency of washing machines or the drying efficiency of dishwashers. This ensures that all appliances will comply with a minimum performance standard. Ecodesign also determines, to a degree, the contents of the operating manuals.

Furthermore, minimum energy efficiency requirements that take effect in stages will, as before, stop appliances with low efficiency to enter the market as of a certain point in time.

The requirements regarding resource efficiency are entirely new. They stipulate, among other things:

- The availability of certain spare parts, distinguishing between professional repairers and consumers. The product regulations specify those spare parts.
- These spare parts must be designed in such a way so that they can be exchanged with commonly available tools and without damaging the appliance.

- Depending on the product and the target group, these spare parts will have to be made available for a period of seven and ten years respectively, counting as of the time the last item of a specific model has been placed on the market.
- Spare parts must be delivered within 15 working days.
- Professional repairers must be given access to repair and maintenance information. Suppliers may require the professional repairer to demonstrate that he has the technical competence and that he complies with the applicable regulations for repairers of electrical equipment in the EU Member States.
- Suppliers may charge an appropriate fee for providing this information.

As of 1st March 2021, this will affect washing machines, washer-dryers, dishwashers and refrigerating appliances. It is to be expected that similar resource efficiency requirements will also apply to other household appliances that are subject to ecodesign regulations. With these stipulations, legislators aim to improve the reparability of appliances and encourage consumers to use them for longer.

Outlook

In a next step, there will also be new, re-scaled labels for tumble-dryers, ovens and cooker hoods. Framework Regulation EU/2017/1369 stipulates that the relevant EU legislative acts must be passed by August 2023 at the latest. Another 18 months later, implementation will begin. Furthermore, the EU Commission is working on a new version of the label for vacuum cleaners, which was repealed in January 2019.

The EU Commission will probably introduce all these labels simultaneously. From today's perspective it is likely that implementation will follow from mid 2022 to mid 2023.

It remains to be seen whether the new energy labels are as successful in energy saving as their predecessors. Surely, there is still potential for an increase in energy efficiency for household appliances; however, this continues to decrease by nature because many technical options have already been implemented.

Moreover, the energy label has to be limited to selected information. The quality of household appliances, however, is characterised not only by high energy efficiency but also by many other characteristics, such as functionality, ease of use, durability, service and the manifold smart features of interconnectivity. For consumers, it is more important than ever to have comprehensive information on which product meets best their requirements before choosing what to buy.

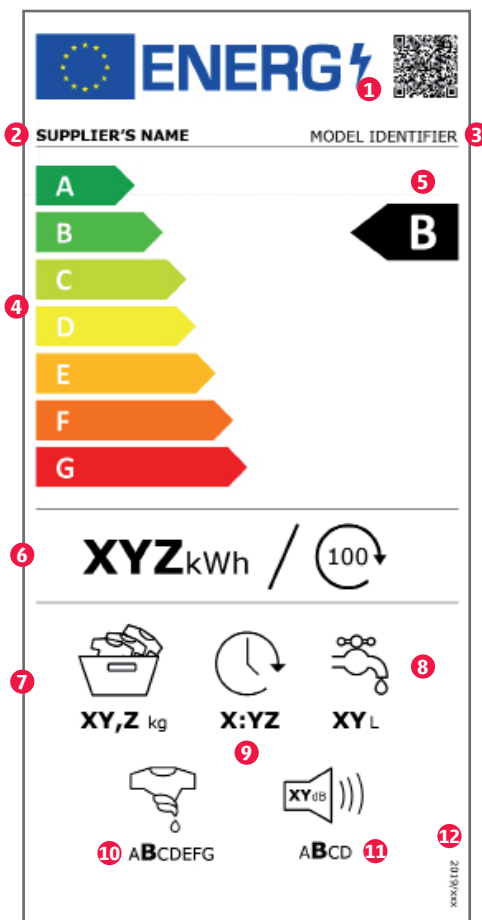
The new energy labels

The new energy labels described below have undergone substantial changes compared to their predecessors, not only in terms of efficiency classes but also in type and volume of information elements, the QR code to link to the EPREL data base and even size: the labels will now be a uniform 192 x 96 mm.

In addition, the measuring and calculation methods to determine the information on the labels and in the information sheets are new. The methods will become more comprehensive and more complex, which is partly due to extended encode-

sign requirements. It is to be hoped that authorities will be able to provide the necessary resources for market surveillance. In order to prevent a distortion of competition it is not enough to check only the information in the database EPREL or in the technical documentation. Compliance with the regulations must also be verified through adequate physical testing in laboratories.

Label for washing machines



- 1 QR code
- 2 supplier's name or trade mark
- 3 supplier's model identifier
- 4 scale of energy efficiency classes from A to G
- 5 energy efficiency class
- 6 weighted energy consumption per 100 cycles in kWh
- 7 rated capacity, in kg, for the eco 40-60 programme
- 8 weighted water consumption per cycle in litres
- 9 duration of the eco 40-60 programme at rated capacity
- 10 spin-drying efficiency class
- 11 airborne acoustic noise emissions of the spinning phase, expressed in dB(A) re 1 pW and airborne acoustic noise emission class
- 12 number of this Regulation

Washing machines

As currently, the energy class is determined by the so-called energy efficiency index (EEI). The EEI for washing machines is based on a new programme called 'eco 40-60'. This programme is stipulated in the relevant ecodesign regulation and applicable as of 1st March 2021: Washing machines shall provide a washing cycle called 'eco 40-60', which is able to clean normally soiled cotton laundry declared to be washable at 40 °C or 60 °C, together in the same cycle.

The energy class is determined by measuring the weighted energy consumption at full, half and a quarter of the nominal capacity. The weighted energy consumption not only determines the EEI and thus classification but is also displayed on the label in absolute numbers (kilowatt hours), pertaining to 100 wash cycles. In contrast, the current labelling shows the weighted annual energy consumption.

The testing programme 'eco 40-60' is also the basis to determine values for other parameters: water consumption,

washing, spinning and rinsing efficiency, residual dampness, noise and – this is new – programme duration.

By including the programme duration, the legislators reacted to the sometimes undue length of the current standard programme, which is not acceptable to many consumers – who then use shorter programmes even though those are less energy efficient.

The new labels for washing machines will furthermore not only display the noise level of the spin cycle in absolute numbers but also give an 'airborne acoustic noise emission class' ranging from A (best) to D.

The information on nominal capacity and spinning efficiency remain unchanged. The latter is an important feature: the higher the spinning efficiency, the lower the rate of residual moisture and therefore energy consumption and drying time when drying the laundry in a tumble dryer. The Standard EN 60456 specifies the measurement methods to determine all parameters.

Table 1: Energy efficiency classes of household washing machines and of the washing cycle of household washer-dryers

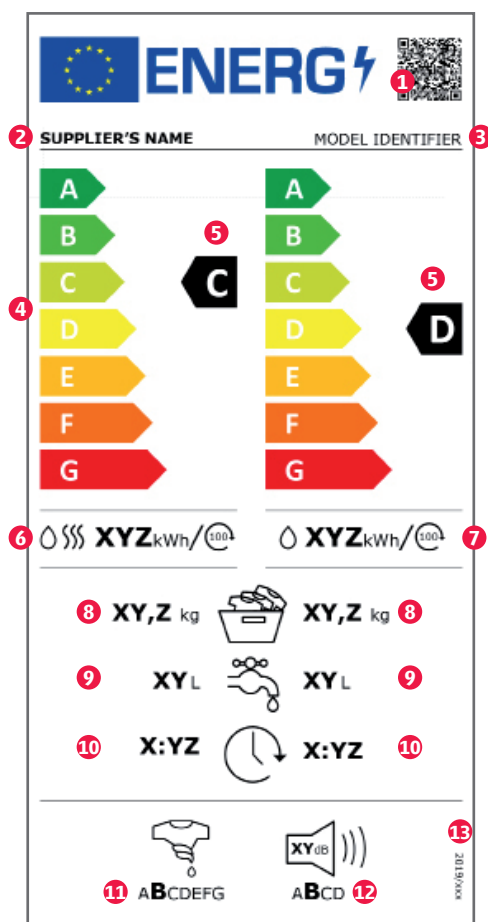
Energy Efficiency Class	Energy Efficiency Index (EEI _w)
A	$EEI_w \leq 52$
B	$52 < EEI_w \leq 60$
C	$60 < EEI_w \leq 69$
D	$69 < EEI_w \leq 80$
E	$80 < EEI_w \leq 91$
F	$91 < EEI_w \leq 102$
G	$EEI_w > 102$

Many of the parameters that will have to be displayed on the label or product information sheet are also subject to ecodesign requirements that will be introduced at the same time as the new labels as of 1st March 2021. For example, the washing and spinning efficiency will have to achieve certain minimum values. There are also limits on water consumption and the duration of the wash cycle (in the programme 'eco 40-60').

To give an example for this time limitation: for a washing machine with a nominal capacity of 8kg, the test programme must not run for longer than 3 hours 39 minutes at maximum load. When loaded to half or a quarter of the nominal capacity, the limit is 2 hours 48 minutes.

Furthermore, the ecodesign regulation limits energy and water consumption in two stages. After 1st March 2021, it will no longer be permitted for most appliances of the G class to be placed on the market. After 1st March 2024, washing machines of the F or G class with a nominal capacity larger than 3kg can no longer be placed on the market.

Label for washer-dryer



- 1** QR code
- 2** supplier's name or trade mark
- 3** supplier's model identifier
- 4** scales of energy efficiency classes from A to G for the complete cycle (on the left side) and for the washing cycle (on the right side)
- 5** energy efficiency class for the complete cycle (on the left side) and for the washing cycle (on the right side)
- 6** weighted energy consumption per 100 cycles in kWh, for the complete cycle (on the left side)
- 7** weighted energy consumption per 100 cycles in kWh, for the washing cycle (on the right side)
- 8** rated capacity for the complete cycle (on the left side) and for the washing cycle (on the right side)
- 9** weighted water consumption per cycle in litre, for the complete cycle (on the left side) and for the washing cycle (on the right side);
- 10** cycle duration at rated capacity for the complete cycle (on the left side) and for the washing cycle (on the right side);
- 11** spin-drying efficiency class,
- 12** airborne acoustic noise emission class of the spinning phase of the eco 40-60 programme and value in dB(A) re 1 pW and
- 13** number of this Regulation

Washer-dryer

The current energy label for washer-dryers has not been updated since its introduction in 1996 and therefore it still displays the original scale A to G. But, due to new measuring methods and new energy classes boundaries, the range of washer-dryers on offer from 1 March 2021 will be distributed differently among the energy classes than today. Also washer-dryers are subject to the EU stipulation that 'no products are expected to fall in energy class A at the moment of introduction of the label.'

Given that washer-dryers are frequently used only for washing, the new label is split into two columns. The symbols correspond to those of the new label for washing machines.

The right-hand column shows the values for the washing cycle only. These values are determined in the test programme 'eco 40-60', like for washing machines. The same applies to the equivalent data in the product information sheet. The label's left-hand column shows the values for the complete operating cycle 'washing and drying'. Thereby, the appliance must achieve the 'cupboard dry' status.

It must be noted that the nominal capacity refers to continuous operation (completion of washing and drying without interruption). If the appliance does not offer continuous operation, the nominal capacity is the lower of the two values 'nominal capacity (washing)' and 'nominal capacity (drying)'.

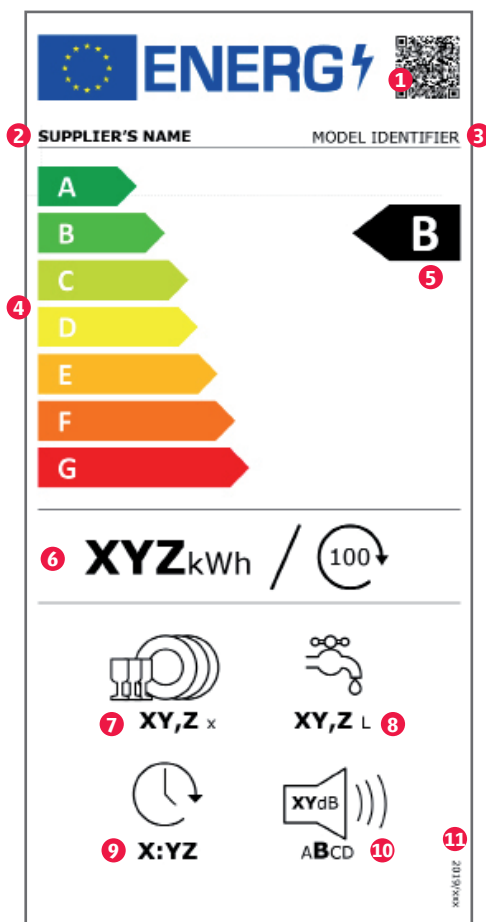
The graduation of the energy classes in the washing-only cycle corresponds to those of the washing machine. The following table shows the classes of the complete operating cycle (washing and drying).

Washer-dryers, too, are subject to new ecodesign regulations. For the washing-only cycle, these correspond mostly to those of washing machines. For the complete operating cycle (washing and drying), the new energy consumption requirements mean that as of 1st March 2024, all G-class and some F-class washer-dryers may no longer be placed on the market.

Table 2: Energy efficiency classes of the complete cycle of a household washer-dryer

Energy Efficiency Class	Energy Efficiency Index (EEI_{WD})
A	$EEI_{WD} \leq 37$
B	$37 < EEI_{WD} \leq 45$
C	$45 < EEI_{WD} \leq 55$
D	$55 < EEI_{WD} \leq 67$
E	$67 < EEI_{WD} \leq 82$
F	$82 < EEI_{WD} \leq 100$
G	$EEI_{WD} > 100$

Label for Dishwashers



Dishwashers

Just like for washing appliances, the energy class of dishwashers is determined by an energy efficiency index (EEI). It is based on the energy consumption of a testing programme that is classified as 'eco'. The manufacturer is free to design this programme; however it must be suitable to clean normally soiled tableware.

Likewise, all other values given on the label or in the product information sheet are determined in the 'eco' testing programme. The new measuring method is specified in the new European Standard EN 60436, which has been revised and adapted to changes in users' behaviour.

Also for dishwashers, the EU commission has defined the classes in such a way that 'no products are expected to fall in energy class A at the moment of introduction of the label.' Rather, it is expected that the majority of models will reach this class after ten years at the earliest.

Besides the new scale A to G, future dishwasher labels will also carry the QR code linking to the EPREL data base, and noise emission will be classified from A to D. The drying performance is no longer displayed on the label, but the eco-design regulation for dishwashers stipulates minimum requirements for this, just as for the cleaning performance.

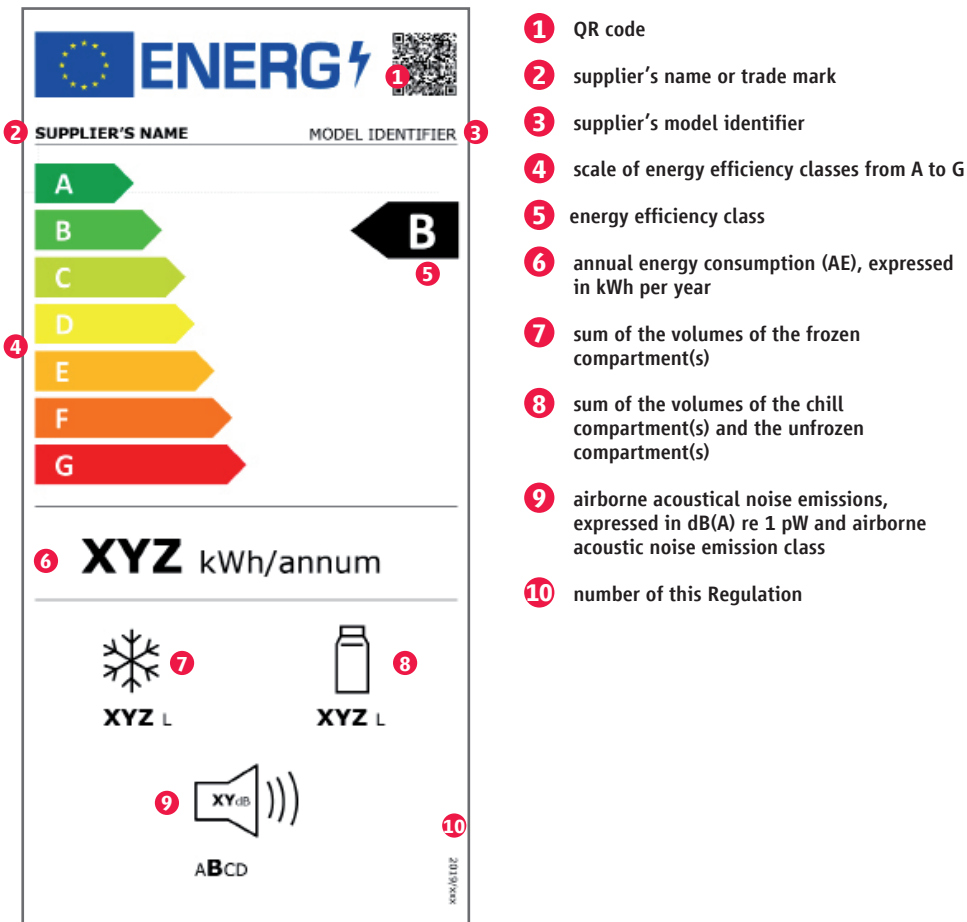
Another change relates to the indication of energy and water consumption in absolute terms. These are no longer shown per year but per 100 or per operating cycle (in the 'eco' programme). Furthermore, the duration for a cleaning cycle in the 'eco' programme has to be displayed, but in contrast to washing appliances, ecodesign measures impose no limit.

The ecodesign regulation for dishwashers has minimum energy efficiency standards, which will apply in two stages. As of 31st March 2021, almost no appliances of the (new) energy class G may be placed on the market any longer. As of 1st March 2024, this ban also applies to dishwashers with energy class F and more than nine standard place settings.

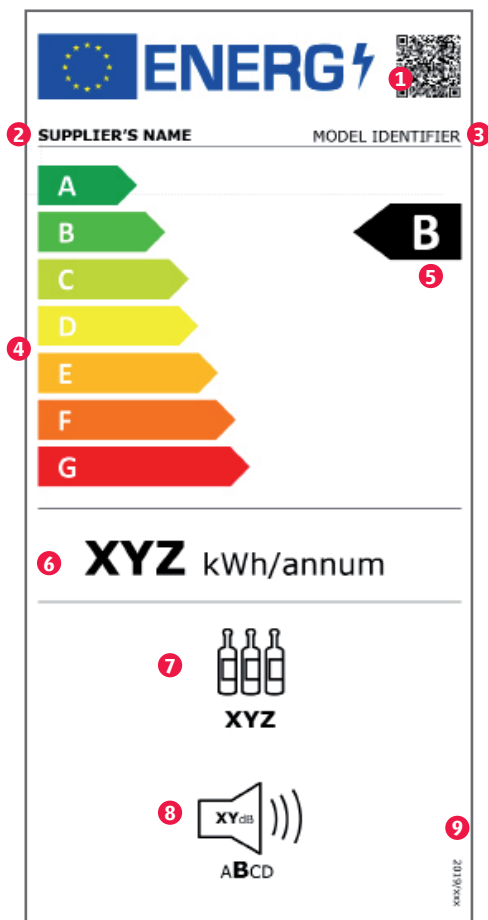
Table 3: Energy efficiency classes of household dishwashers

Energy Efficiency Class	Energy Efficiency Index (EEI)
A	$EEI < 32$
B	$32 \leq EEI < 38$
C	$38 \leq EEI < 44$
D	$44 \leq EEI < 50$
E	$50 \leq EEI < 56$
F	$56 \leq EEI < 62$
G	$EEI \geq 62$

Label for refrigerating appliances



Label for wine storage appliances



- 1 QR code
- 2 supplier's name or trade mark
- 3 supplier's model identifier
- 4 scale of energy efficiency classes from A to G
- 5 energy efficiency class
- 6 annual energy consumption (AE)
- 7 number of standard wine bottles that can be stored
- 8 airborne acoustical noise emissions, expressed in dB(A) re 1 pW and airborne acoustic noise emission class
- 9 number of this Regulation

Refrigerating and wine storage appliances

The new label for refrigerators and freezers is also scaled from A to G and in a way that 'no products are expected to fall in energy class A at the moment of introduction of the label.'

It shows the QR code with a link to the EPREL data base and also displays the acoustic noise emission, scaled from A to D.

The method for determining the energy efficiency index and thus the energy class is complex. It takes into consideration the type of appliance, the functional principle (compressor or noiseless absorption) and also the number, type and volume of the compartments. Furthermore, there are correction factors, such as for automatic defrosting or, in general, for built-in appliances. The measuring and calculation methods set forth in the EN 62552 standard have been updated, mostly in order to ensure even better adaption to real household conditions.

The other elements on the new energy label are mostly unchanged from the present ones. Energy consumption is still given in kWh per year ('annum'). The label also contains information about the overall capacity of all chill and unfrozen compartments and, if applicable, frozen compartments.

Ecodesign requirements for refrigerating appliances will result in a ban to place G class appliances (with compressor technology) on the market as of 1st March 2021. As of 1st March 2024, this ban also applies to F class appliances. Appliances with noiseless absorption technology and wine storage appliances are subject to different limits.

The regulation for refrigerating appliances also contains new labels for wine storage appliances. Apart from the new elements shared by all the new labels (scale, QR code, acoustic noise emission classes, size) there are no changes. As before, the label will indicate the yearly energy consumption, the absolute value for acoustic noise emissions and the number of standard wine bottles that can be stored.

Tab.4: Energy efficiency classes of refrigerating appliances

Energy Efficiency Class	Energy Efficiency Index (EEI)
A	$EEI \leq 41$
B	$41 < EEI \leq 51$
C	$51 < EEI \leq 64$
D	$64 < EEI \leq 80$
E	$80 < EEI \leq 100$
F	$100 < EEI \leq 125$
G	$EEI > 125$



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