

MARKET TRANSFORMATION PROGRAMME

Supporting UK Government policy on sustainable products

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2005 Energy Label Compliance Testing Post-Consultation Report

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SUMMARY

This report outlines the results of energy label tests carried out on 8 ovens, 10 washer driers, 20 tumble driers and 20 refrigerated appliances for the Department for Environment, Food and Rural Affairs via the Market Transformation Programme (MTP) in order to monitor compliance to the regulation for displaying accurate energy labels on electric appliances in retail outlets.

This version of the report is based on the project reports (references 62642, 62636, 62635 and 62641) provided by Intertek Research and Performance Testing and incorporates any relevant comments from suppliers following a consultation process (as part of the agreed "Procedure relating to the publication and promulgation of results of Defra monitoring of energy label information provided by suppliers under UK regulations").

It is intended that this report is suitable for wider circulation, in confidence, to relevant trade bodies and directly interested bodies (eg. Government departments, Trading Standards Institute (TSI)). Those permitted to see the detailed test results and brand information will be sent this information separately.

Samples tested were purchased from high street retailers and included a mix of popular brands and lesser known ones.

Tests were carried out according to the following standards:

- EN 50304: 2001 Electric ovens for household use – Methods for measuring energy consumption
- EN 50229: 2001 Electric clothes washer driers for household use – Methods of measuring the performance
- EN 61121: 1999 Tumble driers for household use – Test methods for measuring the performance, incorporating Amendment No. 1
- EN 153: 1995 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

Reference was also made to:

- Commission Directive 2002/40/EC – electric ovens
- Commission Directive 96/60/EC – combined washer driers
- Commission Directive 95/13/EC – tumble driers
- Commission Directive 94/2/EC as amended by Commission Directive 2003/66/EC – refrigerated appliances

Only one sample of each model was tested in this spot check. To fully comply with the requirements of the test standards any appliances giving measurements outside the tolerances in the standard should have a further three samples tested, however this study did not extend to testing these further samples.

Results summary

Ovens

- Of the eight ovens on test, only one oven agreed completely with the energy consumption values stated on the energy label displayed in the retail outlet.
- The remaining ovens gave different energy class letters for one or more cavities, but the actual kWh measurements were within measurement tolerances. They therefore met the test requirements. One was one class better than that claimed, and six had one or more cavities with one or more functions that were one class worse than that claimed.
- Two suppliers were not aware of the requirement for the energy label of multi-function ovens to display energy consumption for more than one function.
- Suppliers generally place the claimed energy consumption at the lower boundary of the claimed class. They rely on test results falling within the tolerance allowed in the standard to claim compliance. Most appliances achieved results that fall in a class below that claimed.

Washer driers

- Of the 10 washer driers on test, only two were within the measurement tolerances for all the information stated on the energy label.
- Five of the 10 were unable to dry the maximum load to the required level, and effectively these failed the drying test.
 - Of these five, results for one or more of the following attributes were in excess of the measurement tolerances,
 - total water consumption (three models)
 - wash energy consumption (two models);
 - wash performance (two models);
- Of the remaining three washer driers,
 - one had energy consumption,
 - one had spin speed and
 - one had wash performance and total water consumption in excess of the measurement tolerances.
- Some models with sensor drying declare all or part of their claimed results based on tests carried out using a timer option. The test standard does not state that models with sensors should only be tested using the sensor option, but it is implied that this route should be followed. This should be clarified in future revisions of the test standard.
- Suppliers generally place the claimed energy consumption within the lower half of the claimed class, with some placed at the lower boundary with the next class. They rely on test results falling within the tolerance allowed in the standard to claim compliance. Many appliances achieved results that fall in a class below that claimed, although in the higher rated B class the majority fell within the claimed class.

Tumble driers

- Of the 20 tumble driers tested, 17 were within the measurement tolerance allowed for energy consumption.
 - Of these 17, only two were calculated as having the same energy label class as that displayed on the energy label.
 - Of the other 15, 13 were one class worse and two were two classes worse than the class claimed on the energy label.
- Three tumble driers were in excess of the measurement tolerance allowed for energy consumption and all were two classes worse than the declared energy label class.

- Tumble drier test methods appear reliable and reproducible. There were no test method issues identified during the course of consulting with the suppliers.
- Suppliers generally place the claimed energy consumption at the lower boundary of the claimed class. They rely on test results falling within the tolerance allowed in the standard to claim compliance. Many appliances achieved results within the tolerance that fall in a class below that claimed.

Refrigerated appliances

- Of the 20 refrigerated appliances tested, 13 were within the measurement tolerance allowed for energy consumption.
 - Of these 13, only four were calculated as having the same energy label class as that displayed on the energy label.
 - All of the other nine were one class worse than the class claimed on the energy label.
- Seven refrigerated appliances were in excess of the measurement tolerance allowed for energy consumption:
 - Three were one class worse than the declared energy label class
 - Four were two or more classes worse than the declared energy label class.
- A number of test method issues were identified during the testing and consultation process.
 - Interpretation of the definition of frost-free by one supplier
 - Volume calculation errors or incorrect volume declarations were made by three suppliers
 - The measurement of freezer volume without supplied drawers affected the claimed volumes of two suppliers
 - Slim trays at the top of a freezer compartment were issues with two models. Trays are normally loaded for the test unless they are identified as 'unsuitable for food'. One tray was not identified by the supplier as unsuitable for food so it was loaded for the test. One tray in another sample had been included in the volume calculation, despite being less than the required depth for inclusion in the volume calculation.
- Suppliers generally place the claimed energy consumption at the lower boundary of the claimed class. They rely on test results falling within the tolerance allowed in the standard to claim compliance. Many appliances achieved results within the tolerance that fall in a class below that claimed.

As part of the consultation suppliers were forwarded the test results for their appliances. Suppliers were generally receptive to the results of the testing. In instances where there were differences in the measured versus claimed information, discussion was forthcoming and generally a positive outcome achieved. Amongst other things, actions by suppliers included;

- Correcting the format of the information regarding energy consumption on the label
- Adjusting energy consumption claim or class on label
- Changing user or test information supplied with the appliance
- Checking calculations
- Carrying out internal testing or external independent testing

Some suppliers did not confirm if they would further review any performance discrepancies and as this was a consultation rather than enforcement exercise, further information was not pursued.

OVENS INTRODUCTION

This ovens project was commissioned by the Department for Environment, Food and Rural Affairs through the Market Transformation Programme (MTP) in order to monitor compliance to the regulation for displaying correct energy labels on electric ovens in retail outlets.

Of the eight ovens tested, one was a freestanding single oven, one was a freestanding double oven, five were built-in single ovens and one was a range double oven.

All tests were carried out at Intertek Research and Performance Testing (Intertek RPT) during February and March 2005. This report is based on the original project report (Intertek RPT reference 62642) but incorporates any relevant comments from suppliers, or other updates, following a consultation process.

It is intended that this report is suitable for wider circulation, in confidence, to relevant trade bodies and directly interested bodies (eg Government departments, Trading Standards Institute (TSI)). Those permitted to see the detailed test results and brand information will be sent this information separately.

The tests have been carried out in accordance with EN 50304: 2001 and as such, the results are only applicable to the sample tested and the conditions of the test. Sample variability and changes in test conditions could influence some results, and the result(s) as stated may not be representative of the mean result if a number of different samples were tested under a variety of test conditions.

Tests were carried out according to the following standard:

- EN 50304:2001 Electric ovens for household use – Methods for measuring energy consumption

Reference was also made to:

- Commission Directive 2002/40/EC of 8th May 2002

1. Appliance Selection and Purchase

1.1 Appliance Selection

The following protocol was used in producing the list of brands for purchasing:

- Selecting brands from suppliers and parent companies not previously tested in the MTP 2004 oven compliance programme to expand the range tested.
- Including an alternative model type from brands having the same parentage as those brands that failed in 2004 MTP compliance tests. If no alternative brand or model type was available the supplier was not selected for testing in 2005.
- The type of appliance, i.e. built-in/freestanding, double/single oven, selected for each model was designed to broadly reflect the range of ovens in that brand.

1.2 Appliance Purchase

The brands selected were anonymously purchased in the Buckinghamshire area.

The market for cookers and ovens is slightly more fragmented than other domestic appliances owing to supply through DIY and specialist kitchen retailers. No own brands were bought from these retailers in 2005. The types of appliance tested were:

Built-in Single Ovens

Code CV1
Code CV3
Code CV4
Code CV5
Code CV8

Freestanding Double Oven

Code CV2

Freestanding Single Oven

Code CV7

Range Oven

Code CV6

Only one model was on display in the retailer from which it was purchased. Details from the energy label displayed on the appliance in the retail outlet were recorded and compared to the energy label supplied with the appliance. Results of this comparison can be found in Section 4.1.

2. Initial Inspection

All samples were inspected upon arrival at Intertek RPT for any visible damage. Various brand information was recorded for reference.

3. Performance Testing

All tests were carried out at 230 V and under controlled ambient conditions of $23 \pm 2^\circ\text{C}$.

Eight appliances were tested with a total of ten cavities.

- Codes CV1 and CV3 had one forced air cavity only.
- Code CV2 had one forced air cavity and one conventional cavity.
- Codes CV4, CV5, CV7 and CV8 had one cavity with both conventional and forced air functions.
- Code CV6 had one cavity with both conventional and forced air functions and one cavity with conventional function only.

3.1 Installation

In accordance with Clause 6.6.2 of EN 50304:2001, freestanding ovens were installed between kitchen cabinets in accordance with the suppliers' instructions and built in appliances were installed in oven housings.

3.2 Performance Tests

Tests were carried out on each oven cavity using the conventional and/or forced air functions present on the appliance.

Preliminary tests were carried out to determine the settings to be used for each function/cavity in order to give the temperature rises defined in section 8.3.3.1 of EN 50304:2001.

Energy label runs were carried out using a water saturated brick in accordance with section 8.3.1 of EN 50304:2001. The following data was recorded:

- Water absorption of brick.
- Ambient temperature at the start and end of the test.
- Initial brick temperatures.
- Measured energy consumption to achieve a 55K rise in brick temperature.
- Measured time to achieve a 55K rise in brick temperature.
- Steady state oven temperature.
- Calculated oven temperature rise (i.e. Steady state temperature – average ambient temperature).

3.3 Preheating Tests

Preheating tests were carried out on each function/cavity in accordance with Clause 8.2 of EN 50304:2001. Each oven was set to its maximum thermostat position and the time and energy

required to achieve a 155 K rise in temperature for forced air ovens and a 180 K rise in temperature for conventional ovens was recorded.

3.4 Usable Volumes and Surface Areas

The usable height, width and depth of each cavity were measured as per Clause 7 of EN 50304:2001. The usable volume for each of the cavities was then calculated in litres to the nearest whole litre.

The surface areas of the grids or the largest baking sheet (where supplied) were measured in accordance with Clause 7 of EN 50304:2001 and rounded to the nearest 10 cm².

3.5 Calculation of Energy Efficiency

The energy efficiency class for each cavity/function was calculated in accordance with Commission Directive 2002/40/EC of 8th May 2002.

4. Summary of Results

4.1 Evaluation Criteria

Included within the report tables is a summary for each cavity to show the suppliers' claimed values versus measured values with pass/fail criteria applied in accordance with Clause 11 of EN 50304:2001 as detailed below:

Energy consumption: The measured value shall not be greater than the value declared by the manufacturer plus 10% plus 0.040 kWh

Useable volume: The measured value shall not differ from the value declared by the manufacturer plus or minus 5%

Code CV3 was the only oven on display in the retail outlet it was purchased. The energy label data displayed in the retail outlet for this appliance was the same as the energy label data supplied with the appliance.

Code CV6 did not have an energy label supplied with the appliance. The only data available for comparison was the energy class and useable volume as stated in the supplier's promotional brochure (see section 4.3 for more information).

For all other cavities, the energy label data supplied with the appliance was used for comparison to the measured values.

4.2 Pass / Fail Summary and Consultation Outcome

In order to identify significant differences between the measured and claimed results Pass or Fail descriptions were used depending upon whether a measurement was within or outside the tolerances allowed as given above. The Pass or Fail status is shown in the results summary tables for each appliance (these are only available to certain organisations due to agreed confidentiality arrangements).

Suppliers of the tested ovens were sent their test results in July 2005. Follow up was necessary for most suppliers to confirm that they had reviewed the results and to receive any comments.

Code	Measured differences	Comments and action after consultation
CV1	The measured energy class was the same as the claimed energy class. [Energy and volume – Pass]	Not required
CV2	The measured energy class for the main cavity was once class worse than the claimed energy class. [Energy and volume – Pass]	Product shows typical variation and is within measurement tolerances. No action required.
CV3	The measured energy class was one class better than the claimed energy class [Energy and volume - Pass]	Factory will review claim and test data and may change label.
CV4	The measured energy class for the conventional setting on the oven was once class worse than the claimed energy class. [Energy and volume – Pass]	Not required
CV5	The measured energy class for the conventional setting on the oven was one class worse than the claimed energy class. [Energy and volume – Pass] Multifunction oven did not display energy consumption for conventional mode.	No action required on test results. Supplier was informed of requirement for multifunction ovens to display energy consumption in conventional and forced air modes.
CV6	The model was not seen on display prior to purchase, and no energy label was supplied with the sample, neither was full data available on the supplier's website. The supplier did not provide energy label information until sent test results. [Energy and volume – Pass]	Initial data supplied did not comply with the requirements for multifunction ovens. Discussions were held with the supplier, supplementary data was forthcoming and the energy label will be updated with the required information for the multifunction oven.
CV7	The measured energy class for the conventional setting on the oven was one class worse than the claimed energy class, and for the forced air setting it was two classes worse than the claimed energy class. [Energy and volume – Pass]	Not required
CV8	The measured energy class for the conventional setting on the oven was one class worse than the claimed energy class, and for the forced air setting it was one class worse than the claimed energy class. [Energy and volume – Pass]	Not required

4.3 Energy Label Points to Note

The information on the label varied, particularly when it came to including the actual energy consumption for particular heating functions (conventional and forced air). The format of the label specified in the Directive requires the actual kWh be recorded alongside the relevant heating function, however, for some appliances the supplier has given this data at the top of this section of the label plus an indicator arrow alongside the heating function description.

For multifunction ovens (those that have more than one heating function in a cavity), there is still some ambiguity regarding which functions should be detailed on the label. Since testing in 2004 DEFRA have had confirmation from the European Commission that all functions should have a declared kWh/cycle where available on the oven. This information does not seem to have reached all suppliers of multifunction ovens. Discussions were held with two suppliers during this project and the European Commission information passed to them.

Chart 1 compares the claimed energy for the oven, or the main cavity if a multi-cavity oven, on the most efficient setting i.e. that used to generate the energy label class. All cavities were classed as medium, except for CV7 which claimed large, but was measured as medium. This has the effect of moving it to a lower energy class than that claimed.

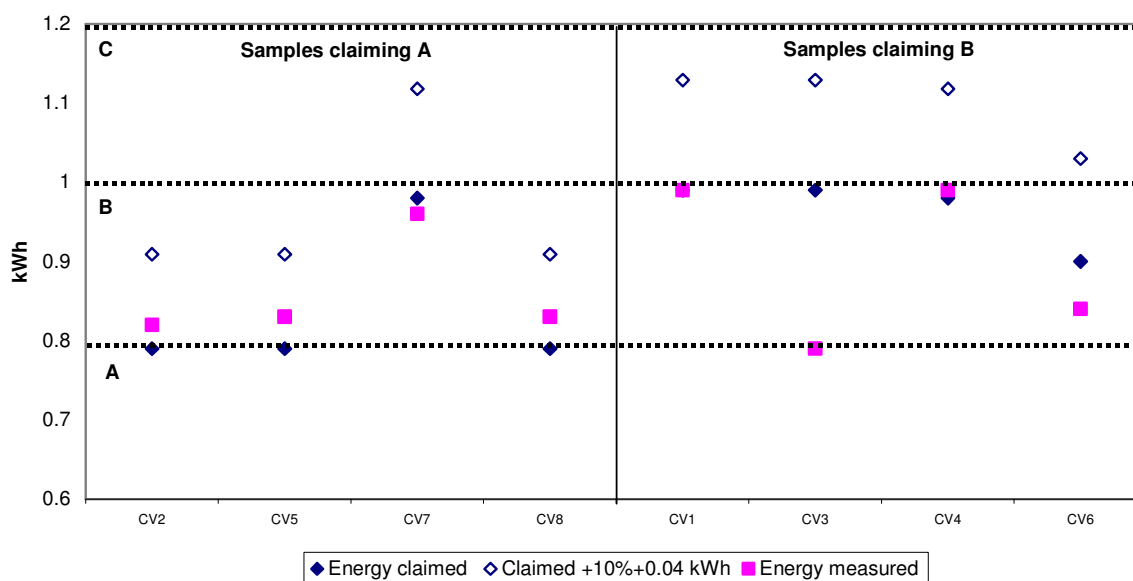


Chart 1: Comparison of energy claims, measurements and tolerances for ovens

Ovens appear to perform close to declared values and the allowed tolerance is tighter on this product than on others such as washing machines and refrigerators. As with other classes of appliance it seems that suppliers are placing the claimed energy value near to the lower boundary of the appropriate class, and then relying on the test results falling within test tolerances to demonstrate that the product is compliant. The result is that most appliances are probably achieving results that fall in a class below that claimed.

4.4 Suggestions for future activity

It appears that the majority of models can produce test results that lie within the tolerance given in the test standard for one sample. However, the test standard states that three tested models should be within 6% of the stated value, plus 0.04 kWh, if the first sample is more than 10% away

from the declared energy. A test project that takes three random samples of one model from each of the top five UK brands could indicate whether this requirement could be met. Brand selection could be focussed on those with test results outside the tolerance and nearest the upper limit of the tolerance in this project.

The accuracy of the oven energy labels poses a low risk to product policy. There are no schemes currently in place that endorse either models or types of electric oven, or offer incentives for early replacement. It is generally accepted that the brick test is a crude performance indicator – the relationship between a good energy rating and good temperature distribution is not known. Also the relationship between energy label class and consumption in domestic use is not known.

WASHER DRIERS INTRODUCTION

The project was commissioned by Market Transformation Programme (MTP) operated by the Department for Environment, Food and Rural Affairs. As detailed in the Terms of Reference (dated 10.01.05), and the quotation reference Q62636/RTCDOM/GOV/JEL/ARP, the research involved the purchase of ten washer driers from high street traders and testing them to assess whether the products passed/failed to meet the energy labels displayed at the time of purchase.

The scope of the project was limited to testing one sample of each appliance.

All testing was carried out at Intertek RPT during February and March 2005

Testing was carried out according to the procedures given in The Energy Labelling Directives. These in turn refer to the test standard EN 61121.

1 Appliance Selection and Purchase

1.1 Appliance selection

The following protocol was used in producing the list of 10 samples for purchasing:

- The selection of brands was based on covering the brands with the largest market share. Not all laundry suppliers include washer driers in their ranges.
- The selection also aimed to avoid brands having the same parentage being selected, except where market dominance justified this. Where this did occur, the models were selected so that different load capacities were represented.
- The selection also aimed to cover a range of different washing and drying capacities.
- No built-in models were selected.

1.2 Appliance Purchase

The brands selected were purchased anonymously in the Buckinghamshire area.

Details from any energy labels displayed on the appliances in the retail outlet were recorded and compared to the energy label supplied with the appliances.

2 Energy Label Display Compliance

When purchasing the appliances the shopper recorded whether or not the display model had an energy label and recorded the information from it.

Table 1 Energy label displayed at point of purchase

Situation at point of purchase	Number of Appliances
Appliance on display, label displayed.	7
Appliance on display, no label displayed.	1
Appliance not on display, no label displayed.	2
Total	10

For the Code WD4, the energy label on display in the shop claimed a water consumption of 190 litres whereas the one that was supplied with the appliance claimed a water consumption of 160 litres. Comparisons have been made against the values displayed at the point of purchase.

3 Appliance Performance Testing Methodology

3.1 Test Procedure

The washer driers were tested for washing performance, energy consumption, water consumption, spin extraction efficiency, spin speed and programme duration according to the method given in EN 50229.

3.2 Base Loads

The base loads were conditioned according to the “bone dry” method, as specified in the above standard.

3.3 Detergent

All washing performance tests were carried out using reference detergent type A*.

3.4 Wascator Water Supply

The water supply for the Wascator FOM71MP-LAB reference washing machine was controlled using a flow meter dosing unit in place of the built-in level control.

4 Performance Results

The results in this report are quoted to their measured accuracy (excluding measurement uncertainty) unless otherwise stated. The tests have been carried out in accordance with EN 50229, and as such, the results are only applicable to the samples tested and the conditions of the test. The test results obtained according to this standard are for direct comparison and in conjunction with the reference machine where applicable, are considered sufficiently reproducible within given limits for the purpose of energy labelling according to the Commission Directive on Energy labelling and standard product information. Changes in test conditions could influence some results, and the result as stated may not be representative of the mean result if a number of different samples were tested under a variety of test conditions.

4.1 Evaluation Criteria

According to EN 50229:2001, Clause 10 Tolerances and control procedures, measured values for washing machines should meet the following criteria when compared to the values claimed by the supplier:

Energy consumption: not greater than the value claimed by the manufacturer plus 15%
Water consumption: not greater than the value claimed by the manufacturer plus 15%
Spin speed: not less than the value claimed by the manufacturer minus 10%, or
minus 100 rpm, whichever is the smaller value
Washing performance: not less than the value declared by the manufacturer minus 0.03

The test standard specifies that if the results of the tests carried out on the first appliance deviate by more than those limits, the test shall be carried out on a further three appliances. The arithmetic mean of the results of testing three additional appliances must then fall within a more tightly specified set of tolerances. The scope of this project was limited to the testing of one sample of each appliance.

If the results of the measured appliance meet the above tolerances the appliance is given a "Pass".

In addition to the criteria given above, it is a requirement that the appliance must be able to dry the maximum load to within three percent of the conditioned dry load weight, using the sensor programme. If the appliance has no sensor programme and is controlled by a timer, the appliance must be capable of drying the maximum load to within three percent of the conditioned dry load weight within the maximum time setting provided by the timer. If this level of dryness cannot be achieved, the test results are void.

4.2 Energy Label Claimed and Measured

The measured results were compared with the claims made on the energy labels displayed at the point of sale where possible, otherwise the energy label supplied with the appliance has been used for comparison.

It should be noted that the limits for washing performance and spin speed are minima. There is no maximum limit for the measured values. Similarly, the limits for water consumption, energy consumption and programme duration are maxima and there is no minimum limit for the measured values.

In order to identify significant differences between the measured and claimed results Pass or Fail descriptions were used depending upon whether a measurement was within or outside the tolerances allowed as given above. The Pass or Fail status is shown in the results summary tables for each appliance (these are only available to certain organisations due to agreed confidentiality arrangements).

Suppliers of the tested washer driers were sent their test results in July 2005. Follow up was necessary for most suppliers to confirm that they had reviewed the results and to receive any comments.

Code	Measured differences	Comments and action after consultation
WD1	Energy efficiency class: 1 worse Energy consumption wash & dry: pass Energy consumption wash only: pass Wash performance class: 1 worse , pass Spin speed: pass Total water consumption: fail Final moisture content too low	Declared results were derived from testing the drying cycle using the timer option, and the test results were derived from using the sensor, which gave a longer time and higher water consumption than the declared value.
WD2	Energy efficiency class: 2 worse Energy consumption wash & dry: fail Energy consumption wash only: pass Wash performance class: 1 worse , pass Spin speed: pass Total water consumption: pass	Model has been discontinued and is no longer being manufactured.
WD3	Energy efficiency class: 1 worse Energy consumption wash & dry: pass Energy consumption wash only: pass Wash performance class: 1 worse , pass Spin speed: pass Total water consumption: pass	Results in tolerance, no comment required.
WD4	Energy efficiency class: same Energy consumption wash & dry: pass Energy consumption wash only: fail Wash performance class: 1 worse , pass Spin speed: pass Total water consumption: pass Final moisture content too high	The high wash energy may be due to a combination of factors. A fully optimised drying system has been introduced which should give better drying results. The model tested is not representative of current production because a number of changes have been made.
WD5	Energy efficiency class: same Energy consumption wash & dry: pass Energy consumption wash only: pass Wash performance class: 2 worse , fail Spin speed: pass Total water consumption: pass Final moisture content too high	The supplier has asked their test laboratory to check its calculations for the wash performance class. The supplier expected a lower initial moisture content than that found in the test sample which may account for the drying result found in the test.
WD6	Energy efficiency class: same Energy consumption wash & dry: pass Energy consumption wash only: pass	Not required

Code	Measured differences	Comments and action after consultation
	Wash performance class: 1 worse , pass Spin speed: fail Total water consumption: pass	
WD7	Energy efficiency class: 1 worse Energy consumption wash & dry: pass Energy consumption wash only: pass Wash performance class: 1 worse , pass Spin speed: pass Total water consumption: pass	Not required
WD8	Energy efficiency class: 1 worse Energy consumption wash & dry: pass Energy consumption wash only: fail Wash performance class: 1 worse , pass Spin speed: pass Total water consumption: fail Final moisture content too high	Drying results may be due to a combination of conditions and software will be changed to prevent occurrence in future.
WD9	Energy efficiency class: 1 worse Energy consumption wash & dry: pass Energy consumption wash only: pass Wash performance class: 6 worse, fail Spin speed: pass Total water consumption: fail Final moisture content too high	Wrong programme shown in the manual for the wash programme selected for the tests, this has been corrected. Drying results may be due to a combination of conditions and software will be changed to prevent occurrence in future.
WD10	Energy efficiency class: 1 worse Energy consumption wash & dry: pass Energy consumption wash only: pass Wash performance class: 2 worse, fail Spin speed: pass Total water consumption: fail	Sample tested had incorrect version of software loaded which gives lower energy consumption and wash performance and higher water consumption than expected. Model no longer in current range.

4.3 Energy Label Points to Note

The only common problem noted with the washer driers was the inability of some models to dry to the required level under the terms of the test. Four samples were unable to dry the maximum load to within three percent of the conditioned dry load weight because the sensor or timer did not permit a long enough drying time: WD4, WD5, WD8 and WD9. These appliances were unable to produce test results that could be used for an energy label assessment. They effectively failed the test completely. The suppliers have responded with a variety of reasons and solutions for these results.

Code WD1 dried the maximum load to more than three percent below the conditioned dry load weight using the sensor dry programme. The sensor programme used more water than the declared value, which the supplier said was based on testing using the timer option. The test standard EN 50229 does not clearly state that sensor driers should only be tested using the sensor option, although it is implied in Sub-clause 9.4.3.2 section C, step 2, paragraph 2 which states “for washer driers with automatic drying, the programme under test is selected and the

washer drier is started. For washer driers without automatic drying ...". The test laboratory believes that washer driers with sensors should be tested using the sensor option, even if a timer is available.

In these tests the better rated models that claimed a 'B' rating for energy were more likely to fall within the claimed class than those that claimed 'C', with three out of four models claiming 'B' having test results within class 'B'. Of the five that claimed 'C', only one had test results that met this claim.

Chart 2 compares the claimed energy efficiency index, the 15% tolerance on the claimed value, and the measured energy efficiency index for all models tested. The claimed energy values are within the lower half of the declared energy class, with some much closer to the lower boundary with the next class. The tolerance would allow the individual products to fall within the claimed class or the next worse class, although in some cases the tolerance stretches across 3 classes.

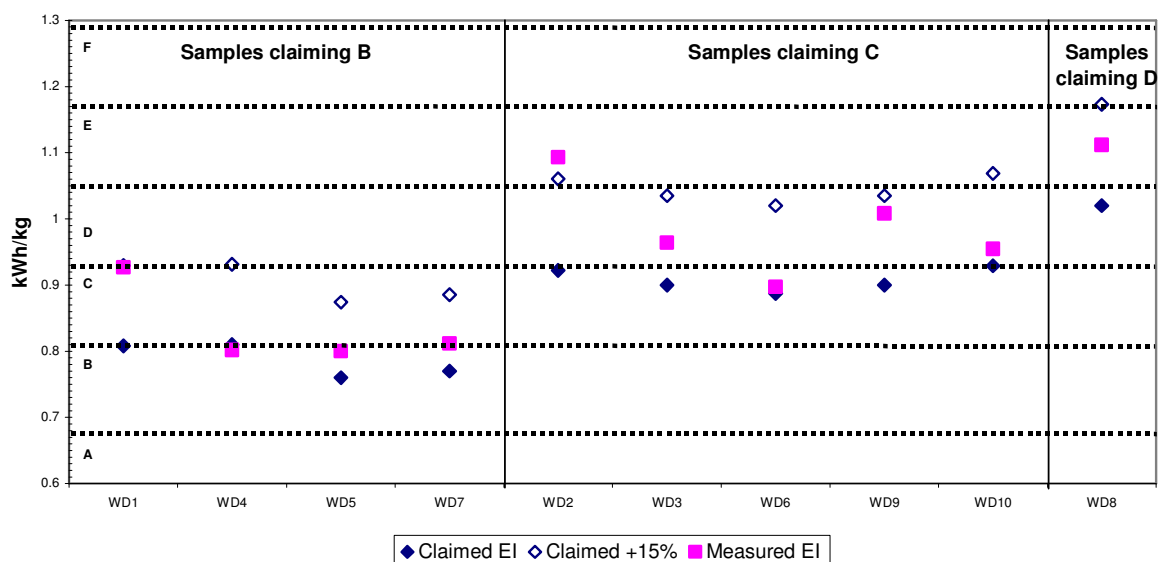


Chart 2: Comparison of energy efficiency indices for washer driers

4.4 Suggestions for future activity

Washer driers form a relatively small part of the UK washing machine market, with sales less than 20% of all washing machine units sold. Further testing of washer driers is not suggested for the immediate future. However a group test of washing machines is suggested to examine current levels of compliance for this product.

The accuracy of the washing machine energy label poses a medium risk to product policy measures. Washing machines are currently endorsed through the EST Energy Saving Recommended (ESR) scheme. EST is committed to testing a 5% sample of the ESR models. Currently ESR accredits AAA rated washing machines. EEC schemes can subsidise 'A' rated washing machines. A group test of washing machine brands and/or models not included in the ESR scheme, but 'A' rated, could evaluate levels of compliance in this sector of the market.

TUMBLE DRIERS INTRODUCTION

The project was commissioned by Market Transformation Programme (MTP) operated by the Department for Environment, Food and Rural Affairs. As detailed in Terms of Reference (dated 10.01.05), and the quotation reference Q62635/RTCDOM/GOV/JEL/ARP, the research involved the purchase of twenty tumble driers from high street traders and testing them to assess whether they passed/failed to meet the stated energy labels displayed at the time of purchase.

The scope of the project was limited to testing one sample of each appliance.

All testing was carried out at Intertek RPT during February and March 2005

Testing was carried out according to the procedures given in The Energy Labelling Directives. These in turn refer to the test standard EN 61121.

1 Appliance Selection and Purchase

1.1 Appliance selection

The following protocol was used in producing the list of brands for purchasing:

- there are five main types of free standing electric tumble drier: full size vented with timer control, full size vented with sensor control, full size condensers with timer control, full size condensers with sensor control, and compact vented with timer control. Models were selected across this range of types. Also on the market there is one model of compact condenser with timer control but this was not selected. The market for built-in models is quite small and no built-in models were selected
- the initial selection of brands was based on covering the brands with the largest market share, and any own brand models that were believed to be available. However, it was not possible to purchase any own brand models due to the time constraints of the project, the retailer had none in stock and could not confirm when any would be available. A substitute model was selected which was believed to be similar to the own-brand model. Not all laundry suppliers include tumble driers in their ranges. Where possible, models from different brands were chosen when selecting from parent companies with several brands in their group
- the only model that is 'A' rated for energy efficiency was selected
- there has been considerable growth in the condenser tumble drier market in recent years and more condensers were selected than vented models.

1.2 Appliance Purchase

The brands selected were purchased anonymously in the Buckinghamshire area.

The models tested were:

Vented with timer control

Code D1
Code D2
Code D3
Code D4

Vented with sensor control

Code D5
Code D6
Code D7
Code D8

Compact

Code D19
Code D20

Condenser with timer control

Code D9
Code D10
Code D11
Code D12
Code D13
Code D14

Condenser with sensor control

Code D15
Code D16
Code D17
Code D18

2 Energy Label Display Compliance

When purchasing appliances, the shopper recorded whether or not the display model had an energy label and recorded the energy label information.

Table 1 Energy label displayed at point of purchase

Situation at point of purchase	Number of Appliances
Appliance on display, label displayed.	13
Appliance on display, no label displayed.	2
Appliance not on display, no label displayed.	5
Total	20

The Code D5 was displayed in the shop with an energy label claiming a capacity of 5 kg. But the energy label supplied with the appliance quoted the capacity as 6 kg. As the appliance instruction book also indicated that the maximum load size was 6 kg, it was tested with a 6 kg load.

The Code D10 was displayed in the shop with an energy label claiming a capacity of 6 kg and an energy consumption of 4.38 kWh. But the energy label supplied with the appliance quoted the capacity as 7.5 kg and the energy consumption as 5.45 kWh. As the appliance instruction book also indicated that the maximum load size was 7.5 kg, it was tested with a 7.5 kg load.

3 Appliance Performance Testing Methodology

3.1 Test Procedure

The tumble driers were tested for energy consumption according to the method given in EN 61121.

3.2 Base Loads

The base loads were conditioned according to the “bone dry” method, as specified in the above standard.

4 Performance Results

The results in this report are quoted to their measured accuracy (excluding measurement uncertainty) unless otherwise stated. The tests have been carried out in accordance with EN 61121 and as such, the results are only applicable to the samples tested and the conditions of the test. The test results obtained according to this standard are for direct comparison and in conjunction with the reference machine where applicable, and are considered sufficiently reproducible within given limits for the purpose of energy labelling according to the Commission Directive on Energy labelling and standard product information. Changes in test conditions could influence some results, and the result as stated may not be representative of the mean result if a number of different samples were tested under a variety of test conditions.

4.1 Evaluation Criteria

According to EN 61121 Clause 101 Tolerances and control procedures, measured values for tumble driers should meet the following criteria when compared to the values claimed by the supplier on the energy label:

Energy consumption: not greater than the value claimed by the supplier plus 15%.

The test standard specifies that if the results of the tests carried out on the first appliance deviate by more than those limits, the test shall be carried out on a further three appliances. The arithmetic mean of the results of testing three additional appliances must then fall within a more tightly specified set of tolerances. The scope of this project was limited to the testing of one sample of each appliance.

If the results of the measured appliance meet the above tolerances the appliance is given a “Pass”.

4.2 Energy Label Claimed and Measured

The measured results were compared with the claims made on the energy labels displayed at the point of sale where possible, otherwise the energy label supplied with the appliance has been used for comparison.

It should be noted that the limit for energy consumption is a maximum and there is no minimum limit.

The results showed that for seventeen of the tumble driers tested, the measured energy consumption was close enough to the values claimed by the suppliers to be within the tolerances permitted under the energy label scheme. Three fell outside the tolerances allowed.

The Code D10 was one of the appliances that failed to meet the energy claim on the energy label. It should be noted that it failed to meet the claim on both the energy label displayed in the shop and the (different) energy label supplied with the appliance.

Code	Measured differences	Comments and action after consultation
D1	Energy label class: 1 class worse Pass	Not required
D2	Energy label class: 1 class worse Pass	Not required.
D3	Energy label class: 1 class worse Pass	Not required
D4	Energy label class: 1 class worse Pass	Not required
D5	Energy label class: 1 class worse Pass	Not required
D6	Energy label class: 1 class worse Pass	Model no longer produced.
D7	Energy label class: 1 class worse Pass	Not required
D8	Energy label class: 1 class worse Pass	Results slightly higher than expected, but within tolerance.
D9	Energy label class: 2 classes worse Pass	Model no longer produced.
D10	Energy label class: 2 classes worse Fail	Energy is higher than expected, sample took too long to dry the load.
D11	Energy label class: 2 classes worse Fail	The supplier was surprised by the results and reviewed their internal test results and commissioned independent tests of the product. These confirmed that the product falls within the tolerance allowed for the declared class.
D12	Energy label class: 1 class worse Pass	Not required
D13	Energy label class: 2 classes worse Pass	Results slightly higher than expected, but within tolerance.
D14	Energy label class: 1 class worse Pass	Not required
D15	Energy label class: 2 classes worse Fail	The supplier was surprised by the results and reviewed their internal test results and commissioned independent tests of the product. These confirmed that the product falls within the tolerance allowed for the declared class.
D16	Energy label class: same Pass	Not required
D17	Energy label class: 1 class worse Pass	Not required
D18	Energy label class: 1 class worse Pass	Not required

Code	Measured differences	Comments and action after consultation
D19	Energy label class: same Pass	Not required
D20	Energy label class: 1 class worse Pass	Not required

4.3 Energy Label Points to Note

Tumble driers would appear to be predictable appliances, and the test methods are reliable and reproducible to the extent that suppliers are confident enough to use a portion of the tolerance when setting the energy label class. One supplier commented about their results:

“Original test results show that this model could be rated as C whilst using an acceptable portion of the allowed tolerance”.

The tolerances exist to allow for sample variability, not for suppliers to use when deciding what class to assign a product to.

Chart 3 compares the claimed energy efficiency index, the 15% tolerance on the claimed value, and the measured energy efficiency index for all ‘C’ rated tumble driers in this test where there was no conflict between the energy label on show in shops and the label supplied with item.

The majority of models claimed energy efficiency indices at the lower boundary of the claimed class. The exception appears to be condensers with sensor functions, where two models were found claiming energy efficiency indices mid way through the class. The tolerance would allow the individual products to fall within the claimed class or the next worse class, although in some cases the tolerance stretches across three classes. Only one of the ‘C’ rated models shown in Chart 3 achieved the class claimed, of those that were within the tolerance they were either within the class below or two classes below the class claimed.

On the basis of this evidence it would seem that the migration of products from ‘D’ to ‘C’ class that has been seen over the last few years could be based almost entirely on use of the tolerances rather than an improvement in product efficiency¹. This unfortunate practice is widespread and does not allow fair competition for suppliers whose products meet their claims.

¹ In 1999 approximately 30% of sales of full size vented tumble driers were ‘C’ class, in 2004 this figure had risen to over 80%. MTP does not have figures for condenser driers prior to 2002, but in 2002 80% of condenser driers were ‘C’ rated, in 2004 the figure had risen to over 98%. Condensers have been increasing their overall share of the tumble drier market.

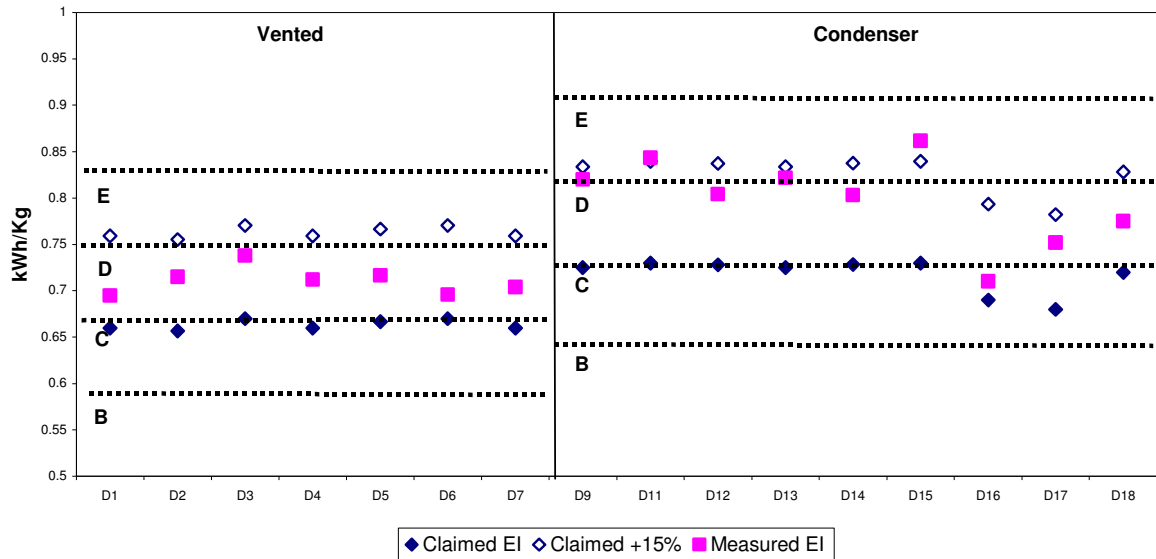


Chart 3: Comparison of energy efficiency indices for 'C' rated tumble driers – UK 2005

Chart 4 shows the same types of data for 'C' rated tumble driers tested in Denmark since 2001². This data suggests that the situation in Denmark is similar, with suppliers claiming energy consumptions that, when calculated as efficiency indices for the purposes of the energy label, place them near the lower boundary of the 'C' class. However, test results show that the appliances consistently perform within the 'D' class or lower, but are within the allowed tolerance given in the test standard.

² Data taken from publicly available test results at www.ens.dk on 20.09.2005.

<http://www.ens.dk/energimaerke/KontrolToerre.Asp?a=a&Lang=ENG&Vmaerke=0&Pass=A&Sort=D>

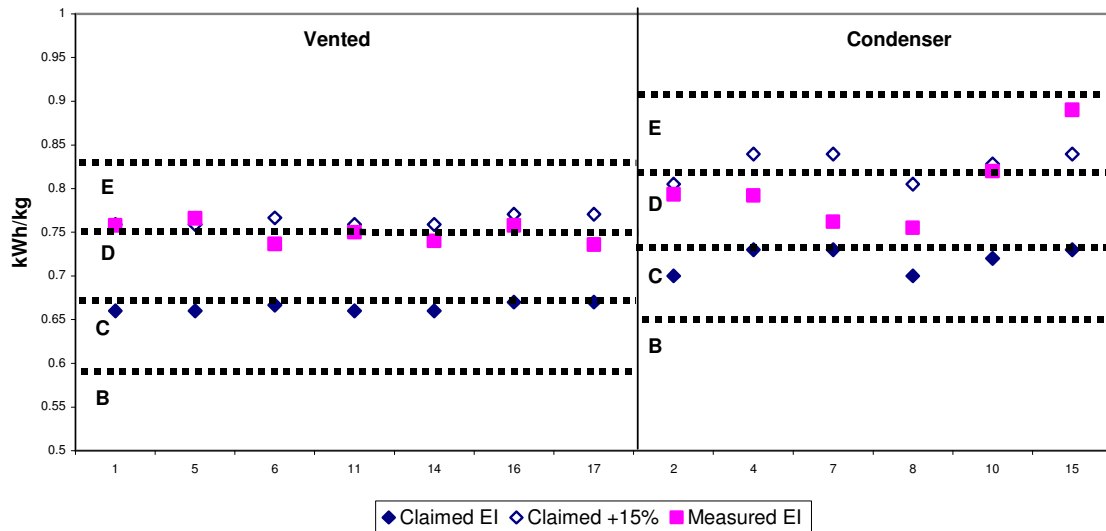


Chart 4: Comparison of energy efficiency indices for 'C' rated tumble driers – Denmark 2001-2004

4.4 Suggestions for future activity

On a random sampling basis such as this work and that done in Denmark, it appears that the majority of models can produce test results that lie within the tolerance given in the test standard for one sample. However, the test standard goes on to state, for products that were outside the maximum tolerance, that three further models should be tested and should be within 10% of the stated value. A test project that takes three random samples of one model from each of the top five UK brands could indicate whether the 10% requirement could be met. Brand selection could be focussed on those with test results outside the tolerance or nearest the upper limit of the tolerance in this project.

The accuracy of the tumble drier energy label poses a medium risk to product policy measures. EST is about to review the criteria for ESR endorsement of tumble driers, and it is likely that the criteria will be changed to include 'C' rated driers with sensors. As part of the ESR scheme EST will be required to spot check 5% of tested models, so it is suggested that further testing should be undertaken on 'C' rated driers without sensors from brands that were over or near the tolerance levels in the tests reported here.

REFRIGERATED APPLIANCES INTRODUCTION

The project was commissioned by Defra's MTP. As detailed in Terms of Reference dated January 2005, accompanying the quotation reference Q62641/RTCDOM/GOV/JEL/ARP dated January 2005. The research involved the purchase of 20 domestic cold appliances from high street traders and testing them to measure whether the products complied with the values declared on their energy labels displayed at the time of purchase.

The scope of the project was limited to testing one sample of each appliance.

All testing was carried out at the Danish Technological Institute (DTI) between March and May 2005.

Testing was carried out in accordance with:

EN 153 : 1995 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.

and with:

EN 28187 : 1991 Household refrigerating appliances, Refrigerators-freezers – Characteristics and test methods

EN ISO 8561 : 1995 Household frost-free refrigerating appliances – refrigerators, refrigerator-freezers, frozen food storage cabinets and food freezers cooled by internal forced air circulation – Characteristics and test methods.

EN ISO 7371:1996 Household refrigerating appliances – Refrigerators with or without low temperature compartment – Characteristics and test methods.

EN ISO 5155: 1995 Household frozen food storage cabinets and food freezers - Essential characteristics and test methods, is used as the appropriate Standard.

as appropriate to the type of appliance.

The report details the selection and purchasing of the appliances, including compliance with displaying the label at the retail outlet.

1 Appliance Selection and Purchase

1.1 Appliance selection

The following protocol was used in producing the list of brands for purchasing:

- For the fridge-freezer list, ten models of upright fridge-freezer were selected from different brands that were being promoted under a British Gas EEC scheme in a retailer during January 2005. At that time only a limited number of 'A' energy rated models from a limited number of brands were promoted through this scheme. The scheme was subsequently extended to include all 'A' energy rated fridge-freezers, but the brand list was not changed

as it covered a representative selection of suppliers. The majority of the samples were bought from the retailer, but three were sourced from other retailers.

- The five fridges and five freezers were chosen from brands not already represented in the fridge-freezer list. The selection includes three retailer own brands

1.2 Appliance purchase

An anonymous shopper purchased the appliances in the Buckinghamshire and Bedfordshire areas. The brands tested were:

Upright fridge freezers

Code EC1
Code EC2 (frost free)
Code EC3 (frost free)
Code EC4 (frost free)
Code EC5 (frost free)
Code EC6
Code EC7
Code EC8 (frost free)
Code EC9
Code EC10 (frost free)

Note that for Codes EC2, EC4 and EC5, the freezer only is cooled by forced air. The fridge compartments are cooled in a conventional manner (evaporator plate) and not by forced air. This has implications for the energy index where a 1.2 factor is claimed for “no frost” compartments and can give a step up the energy index ladder. The fridges in these appliances are “no frost”, in the same sense as any other appliance with a fridge compartment.

Under counter larger fridges

Code FR1
Code FR2
Code FR4

Under counter fridges with a low temperature compartment

Code FR3
Code FR5

Upright freezers

Code FZ1
Code FZ2
Code FZ4

Chest freezers

Code FZ3
Code FZ5

2 Energy Label Display Compliance

When purchasing the appliances the shopper recorded whether or not the display model had an energy label and recorded the information from it.

All but one of the appliances that were on display in high street shops displayed a complete and correct energy label on the display models in the retail outlets.

For the four models that were sourced through a wholesaler or catalogue the details from the energy label of the display model could not be recorded as these appliances were purchased sight unseen.

3 Appliance Performance Testing Methodology

3.1 Test Procedure

Tests were carried out according to the following standards as appropriate to the type of appliance:

- EN 153:1995 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
- EN 28187:1992 Household refrigerating appliances, Refrigerator-freezers - Characteristics and test methods
- EN ISO 8561:1995 Household frost free refrigerating appliances - Refrigerators, refrigerator-freezers, frozen food storage cabinets and food freezers cooled by internal forced air circulation - Characteristics and test methods
- EN ISO 7371:1995 Household refrigerating appliances – Refrigerators with or without low temperature compartment - Characteristics and test methods
- EN ISO 5155:1995 Household refrigerating appliances – Frozen food storage cabinets and food freezers – Characteristics and test methods

Loading plans were designed by the Danish Technological Institute in accordance with Clause 13 of the appropriate standard.

4 Performance Results

The results in this report are quoted to their measured accuracy (excluding measurement uncertainty) unless otherwise stated. The tests have been carried out in accordance with the relevant standards, and as such, the results are only applicable to the sample tested and the conditions of the test. Sample variability and changes in test conditions could influence some results, and the result as stated may not be representative of the mean result if a number of different samples were tested under a variety of test conditions.

4.1 Evaluation criteria

According to the applicable test standard, measured values for refrigerated appliances should meet the following criteria when compared to the values claimed by the supplier on the energy label:

Energy consumption: not greater than the value claimed by the manufacturer plus 15%.

Volume measurements: not greater than the value claimed by the manufacturer plus 3%.

The test standard specifies that if the results of the tests carried out on the first appliance deviate by more than those limits, the test shall be carried out on a further three appliances. The arithmetic mean of the results of testing three additional appliances must then fall within a more tightly specified set of tolerances. The scope of this project was limited to the testing of one sample of each appliance.

If the results of the measured appliance meet the above tolerances the appliance is given a "Pass".

4.2 Claimed Energy Label versus Measured Results

The claimed energy index (EI) is not actually displayed on the energy label but is implied from the EI calculation using the claimed energy consumption and volume(s) from the energy label.

For Codes EC2, EC6, FR2, FZ2, FZ3 it is observed that an erroneous energy class has been claimed from the declared energy and volume values, i.e. an energy index calculation based on the supplier's own energy and volume declaration gives a different energy class to that displayed on the label. This is either due to an erroneous calculation or a different interpretation of the test standards where an "unearned" factor is applied.

An appliance may not achieve the energy class as declared on the energy label because the measured energy is greater than the claimed energy or because the measured volume is smaller than the claimed volume or because of both.

Code FZ2, proved problematic in obtaining a test result. According to the test laboratory, initially it was not possible to accomplish the energy consumption test because of a large "hysteresis". This means that the appliance was difficult to set to the correct temperature profile and it therefore took longer to achieve valid energy consumption test run(s). It is not clear whether this

appliance has a defective thermostat or is of a poor design. However, it has been decided to publish with the test result achieved because the appliance is cold (max temperature in the region of -15°C) and therefore any consumer buying this model in this condition would not be aware that the appliance is performing poorly in terms of its temperature profile and energy consumption. The supplier has since claimed that the product should not be loaded in the top tray and that the test results would be different if the product was loaded differently. It is not possible to know whether the product would suffer similar problems without further testing.

Code	Measured differences	Comments and action after consultation
EC1	Energy label class: same Energy consumption: pass Refrigerator volume: pass Freezer volume: fail	Supplier believes all declarations to be correct.
EC2	Energy label class: one class worse Energy consumption: pass Refrigerator volume: pass Freezer volume: fail	Error noted in the declared freezer volume calculation which will be changed for this and related models . Disagree over whether fridge compartment is 'frost-free' and use of the frost-free factor in calculating the energy label class.
EC3	Energy label class: one class worse Energy consumption: pass Refrigerator volume: pass Freezer volume: pass	Not required
EC4	Energy label class: one class worse Energy consumption: fail Refrigerator volume: pass Freezer volume: pass	Product no longer available.
EC5	Energy label class: one class worse Energy consumption: fail Refrigerator volume: pass Freezer volume: pass	The unit was returned to the supplier, who investigated the unit and found it had virtually no refrigerant in the system. A split was found in the condenser tubing. It is not known when the damage occurred, but if the system had leaked some refrigerant before testing this may have caused the poor result.
EC6	Energy label class: one class worse Energy consumption: pass Refrigerator volume: pass Freezer volume: fail	Model will no longer be manufactured in UK.
EC7	Energy label class: one class worse Energy consumption: fail Refrigerator volume: fail 2* compartment: pass Freezer volume: fail	No comments
EC8	Energy label class: same Energy consumption: pass Refrigerator volume: pass Freezer volume: fail	Supplier claims that the freezer volume should be measured with the drawers removed. However, as there are no shelves the test lab believes the volume should be measured with the drawers in place in the same way as the energy consumption is measured.
EC9	Energy label class: one class worse Energy consumption: pass Refrigerator volume: pass	The incorrect volume was declared on earlier products, this was identified by supplier prior to these tests and was

Code	Measured differences	Comments and action after consultation
	Freezer volume: fail	changed.
EC10	Energy label class: one class worse Energy consumption: pass Refrigerator volume: pass Freezer volume: fail	Supplier included a slim tray in the volume measurements. The test lab did not because it was less than 52 mm deep. There is no instruction to users that the tray can be removed, so the volume was measured with tray in place. The model has been discontinued, and any future models with a slim tray will include instructions for users that the tray may be removed for increased volume.
FR1	Energy label class: same Energy consumption: pass Refrigerator volume: fail	Volume outside tolerance, there may be some confusion between net and gross volumes. The volumes will be checked and any necessary changes made.
FR2	Energy label class: same Energy consumption: pass Refrigerator volume: pass	Not required
FR3	Energy label class: one class worse Energy consumption: pass Refrigerator volume: pass Freezer volume: pass	Not required
FR4	Energy label class: same Energy consumption: pass Refrigerator volume: pass Freezer volume: pass	Not required
FR5	Energy label class: two classes worse Energy consumption: fail Refrigerator volume: fail Freezer volume: fail	Model discontinued. Supplier will be having independent checks undertaken on all current models and future introductions.
FZ1	Energy label class: five classes worse Energy consumption: fail Freezer volume: fail	The supplier has started to investigate why this model did not perform as claimed
FZ2	Energy label class: four classes worse Energy consumption: fail Freezer volume: pass	Supplier says the handbook has since been modified to show that the top tray is not suitable for food. Not loading this area would give different test results.
FZ3	Energy label class: four classes worse Energy consumption: fail Freezer volume: pass	No comment received
FZ4	Energy label class: one class worse Energy consumption: pass Freezer volume: fail	Seeking clarification of volume measurements
FZ5	Energy label class: one class worse Energy consumption: pass Freezer volume: pass	Supplier was surprised to see higher energy consumption, but model is no longer supplied and fell within tolerance allowed.

4.3 Energy label points to note

Energy label display and supply

All but one of the appliances on sale in retail outlets displayed a complete energy label.

For the four models that were sourced through a wholesaler or catalogue the details from the energy label of the display model could not be recorded as these appliances were purchased unseen.

Another four models had differences between the energy label displayed and the energy label supplied with the appliance. Except Code EC7, all the differences were not significant enough to change the energy label rating.

The supplied energy label for the Code EC7 is quite different to the displayed label. The test results could suggest that the energy label has been upgraded without modification to the appliance.

The label supplied with Code FZ3 claimed an 'A' rating for the appliance. The test laboratory calculated that the rating class should be class 'C' rather than 'A'. It is possible that the supplier had not used the correct "M and N coefficients" for a chest freezer when calculating the energy label rating, and instead substituted the coefficients for an upright freezer. The supplier has not responded to requests for comments for this project, so this cannot be confirmed.

Test procedures

In some cases different interpretations of the test standards give rise to differences between measured and claimed energy label classes. The information provided by suppliers can also affect the way that samples are tested and the results that are achieved.

- The supplier of code EC2 interprets the definition of frost-free in a way that allows them to claim the frost-free allowance in the energy calculation for the fridge compartment, thereby improving the energy class by one position. The test laboratory disagrees with their interpretation and has not used the frost-free allowance when calculating the energy class.
- Three suppliers (Codes EC2, EC9 and FR1) identified volume calculation errors or declarations either during or prior to this test programme. These have been checked and changed where necessary for new products, and may change the energy label class declared for the affected products.
- The measurement of the freezer volume is a contentious issue as it is possible for suppliers to give a greater volume for the freezer compartment by removing drawers and flaps and taking the measurements, rather than measuring with the drawers and flaps in place. This affected the results for two models in this test, Codes EC8 and EC10. However, the test standard says that the appliance should be set up as for normal use, and it is believed that this should include all drawers and fittings, regardless of whether it is possible to use the appliance without some or all of them.

Some freezer compartments have a slim tray at the top that may or may not be suitable for food storage. In this test two models had such a tray, Codes EC10 and FZ2. In Code FZ2 the tray was

not declared as being unsuitable for food storage and so was loaded for the test. The freezer was unable to reach the required temperatures on maximum thermostat setting and recorded excessive energy consumption as a result. The supplier then claimed that the instruction book would be changed in future models, so that if this model is tested again it should not be loaded in the tray and should be able to produce results in accordance with the declared values. In the case of Code EC10 the tray affected the volume measurement as the supplier had included it in the calculation, whereas the standard says it should not be included as it was less than the required 52 mm deep. If the instruction book had said that the drawer was optional, then the volume could be measured without the drawer in place.

Test results

Fifteen out of twenty appliances tested did not comply with the energy class as claimed on the energy label. Of these fifteen, eleven appliances were one class worse and four were two or more classes worse.

Ten out of these fifteen non-compliance appliances have energy consumption and / or volumes at least 10% worse than that claimed on the energy label. (This is well outside the limitations of any laboratory uncertainty). Eight were in excess of the allowed 15% tolerance on energy.

Codes FR5, FZ1, FZ2 and FZ3 are at least two energy classes adrift from the claim on the energy label. It could be argued that this degree of discrepancy is a serious abuse of the energy label scheme. Except for FZ3, all of these are retailer 'own brand' models.

Eight of the ten fridge-freezers were found to be one energy class worse than the declared value, and of these eight, three had energy consumption in excess of the allowed 15% tolerance.

Chart 5 compares the claimed energy efficiency index, the 15% tolerance on the claimed value, and the measured energy efficiency index for fridge freezers and refrigerators in this test rated 'A' or 'B'.

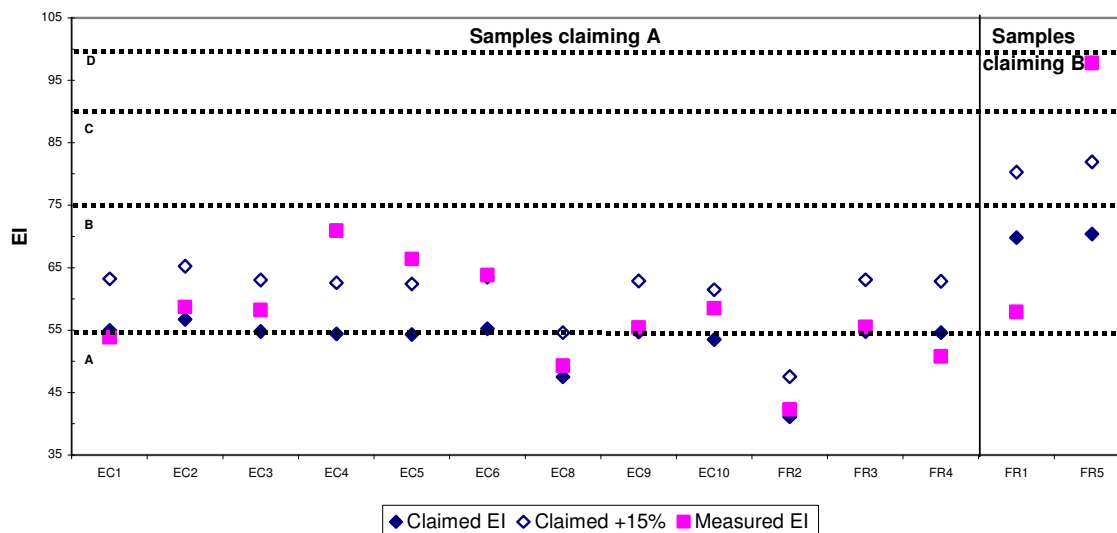


Chart 5: Comparison of energy efficiency indices for A and B rated fridge-freezers and refrigerators

Chart 5 shows that for the fridge-freezers, the suppliers were generally positioning the efficiency index at a value at the bottom of the 'A' class, just above the boundary for 'B'. This means that when the energy tolerance comes in to play there is more likelihood of the appliance achieving a 'B' rating than an 'A' rating. Three exceptions to this were Codes EC1, EC8 and FR2.

All of the fridge-freezers shown in Chart 5 were claiming 'A' rating and consumers were benefiting from reduced prices at the retailer through subsidies from EEC subsidies from British Gas. On the basis of these test results, only two of the nine models shown in Chart 5 met the claims for 'A' rating and the requirement for EEC funding, the remaining seven did not.

4.4 Suggestions for future activity

Refrigeration is an area of high product policy risk because some products are endorsed through ESR and supported by EEC schemes. ESR endorses A+ rated models and EST has a remit to spot check 5% of listed models. It is therefore suggested that further testing is undertaken on 'A' rated products that are found to be part of EEC schemes in autumn 2005. This should again focus on fridge-freezers because they form the largest part of the market.

Another area for concern is retailers' own brands, some of which were found to perform very poorly. It is suggested that a further round of testing is undertaken that focuses on own brand models from major UK retailers and any similar models that are promoted to independent retailers.