

TECHNICAL REPORT

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Outdoor Electric Grills: Safety Assessments

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Introduction

The Electrical Safety Council provided Intertek with a selection of outdoor electric grills for testing under the general safety provisions of the relevant standards.

In particular, four samples were selected for testing. An overview of the samples is shown on page 3.

The safety assessments have been carried out under the terms of reference in [Appendix I](#), and as such, the results are only applicable to the samples tested and the conditions of the tests. 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.

The assessments were carried out at Intertek during August 2008.

Summary

Standard classification and marking departures were found for three of the samples. The remaining sample passed the Intertek safety assessment with no departures being noted. An observation was also made for one sample regarding the marking of rated voltage. General advice for the safe use and installation of these types of product can be found in [Appendix II](#).

The table below contains the sample details and the assessment results.

Intertek sample code	Product type	Assessment results
EA1	Outdoor electric grill	FAIL
ED1		FAIL
EE1		FAIL
EJ1	Indoor electric grill	Pass

Project Samples Overview

The following four samples were selected for testing under this project:



Sample code EA1



Sample code ED1



Sample code EE1



Sample code EJ1

Electrical Safety Assessment

The outdoor electric grills are classed as electrical equipment under the Electrical Equipment (Safety) Regulations 1994, which implement into the UK law the Low Voltage Directive 2006/95/EC.

The samples have been subjected to a safety assessment under the general safety provisions of the following standards:

- EN 60335-1:2002 Household and similar electrical appliances – Safety
Part 1: General requirements, incorporating A1, A2, A11 and A12
- EN 60335-2-78:2003 Household and similar electrical appliances – Safety –
Part 2-78: Particular requirements for outdoor barbecues

The terms of reference for the Intertek safety assessment can be found in [Appendix I](#).

Electrical Safety Assessments

Outdoor Electric Grill (Sample code EA1)



Figure 1 Sample EA1

Initial Inspection and Functional Check

The sample was undamaged and a functional check proved satisfactory.

Electrical Safety Assessment

The following standards were used for the electrical safety assessment. Results of the safety assessment are shown in the table below.

- EN 60335-1:2002 Household and similar electrical appliances – Safety Part 1: General requirements, incorporating A1, A2, A11 and A12
- EN 60335-2-78:2003 Household and similar electrical appliances – Safety – Part 2-78: Particular requirements for outdoor barbecues

Safety criteria	Results
Functional check	Pass
Marking and instructions	Pass <i>+observation</i>
Protection against access to live parts	Pass
Leakage current and electric strength	Pass
Stability and mechanical hazards	Pass
Mechanical strength	Pass
Construction	Pass
Internal wiring	Pass
Supply connection and external flexible cords	Pass
Provision for earthing	Pass
Clearance, creepage distances and solid insulation	Pass

Additional testing

Classification	FAIL
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Sample code EA1 - Electrical Safety Assessment Departure

Classification

EN 60335-2-78, clause 6.2

The above clause states:

“Appliances shall be at least IPX4.”

Inspection revealed that the appliance is not marked as IPX4 (see Figure 2). In general, the first numeral of the IP (International Protection) code denotes the protection of equipment against ingress of solid bodies and the second numeral denotes the protection of equipment against ingress of liquid. In this case, IPX4 denotes “splash proof”.

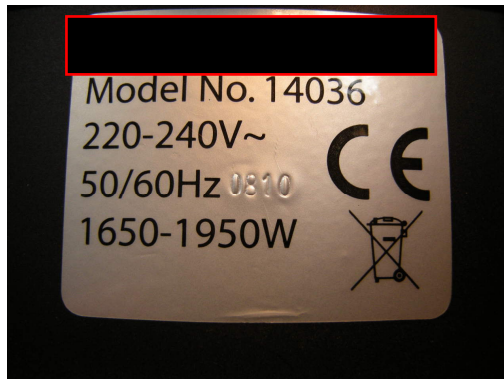


Figure 2 Appliance rating label

Observation

Marking and instructions

EN 60335-2-78, clause 7.1

The above clause states that the appliance shall be marked with the rated voltage, which shall cover 230 V for single-phase appliances.

Inspection revealed that the appliance is marked 220-240V (see Figure 2), while the inlet connector is marked 250V (see Figure 3). The above clause states that the rated voltage for a single-phase appliance shall cover 230V.



Figure 3 Inlet connector rating label

Outdoor Electric Grill (Sample code ED1)



Figure 3 Sample ED1

Initial Inspection and Functional Check

The sample was undamaged and a functional check proved satisfactory.

Electrical Safety Assessment

The following standards were used for the electrical safety assessment. Results of the safety assessment are shown in the table below.

- EN 60335-1:2002 Household and similar electrical appliances – Safety Part 1: General requirements, incorporating A1, A2, A11 and A12
- EN 60335-2-78:2003 Household and similar electrical appliances – Safety – Part 2-78: Particular requirements for outdoor barbecues

Safety criteria	Results
Functional check	Pass
Marking and instructions	FAIL
Protection against access to live parts	Pass
Leakage current and electric strength	Pass
Stability and mechanical hazards	Pass
Mechanical strength	Pass
Construction	Pass
Internal wiring	Pass
Supply connection and external flexible cords	Pass
Provision for earthing	Pass
Clearance, creepage distances and solid insulation	Pass

Additional testing

Classification	FAIL
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Sample code ED1 - Electrical Safety Assessment Departures

Classification

EN 60335-2-78, clause 6.2

The above clause states:

“Appliances shall be at least IPX4.”

Inspection revealed that the appliance is not marked as IPX4 (see Figure 4).



Figure 4 Appliance rating label

Marking and instructions

EN 60335-2-78, clause 7.12

The above clause states that the instructions should contain the substance of the following warnings:

- *the appliance should be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA.*
- *The appliance is to be connected to a socket-outlet having an earthing contact (for class I appliances).*

The above warnings were not present in the user instructions.

Outdoor Electric Grill (Sample code EE1)



Figure 5 Sample EE1

Initial Inspection and Functional Check

The sample was undamaged and a functional check proved satisfactory.

Electrical Safety Assessment

The following standards were used for the electrical safety assessment. Results of the safety assessment are shown in the table below.

- EN 60335-1:2002 Household and similar electrical appliances – Safety Part 1: General requirements, incorporating A1, A2, A11 and A12
- EN 60335-2-78:2003 Household and similar electrical appliances – Safety – Part 2-78: Particular requirements for outdoor barbecues

Safety criteria	Results
Functional check	Pass
Marking and instructions	Pass
Protection against access to live parts	Pass
Leakage current and electric strength	Pass
Stability and mechanical hazards	Pass
Mechanical strength	Pass
Construction	Pass
Internal wiring	Pass
Supply connection and external flexible cords	Pass
Provision for earthing	Pass
Clearance, creepage distances and solid insulation	Pass

Additional testing

Classification	FAIL
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Sample code EE1 - Electrical Safety Assessment Departure

Classification

EN 60335-2-78, clause 6.2

The above clause says:

“Appliances shall be at least IPX4.”

Inspection revealed that the appliance is not marked as IPX4 (see Figure 6).



Figure 6 Appliance rating label

Indoor Electric Grill (Sample code EJ1)



Figure 7 Sample EJ1

Initial Inspection and Functional Check

The sample was undamaged and a functional check proved satisfactory.

Electrical Safety Assessment

The following standards were used for the electrical safety assessment¹. Results of the safety assessment are shown in the table below.

- EN 60335-1:2002 Household and similar electrical appliances – Safety Part 1: General requirements, incorporating A1, A2, A11 and A12
- EN 60335-2-78:2003 Household and similar electrical appliances – Safety – Part 2-78: Particular requirements for outdoor barbecues

Safety criteria	Results
Functional check	Pass
Marking and instructions	Pass
Protection against access to live parts	Pass
Leakage current and electric strength	Pass
Stability and mechanical hazards	Pass
Mechanical strength	Pass
Construction	Pass
Internal wiring	Pass
Supply connection and external flexible cords	Pass
Provision for earthing	Pass
Clearance, creepage distances and solid insulation	Pass

Additional testing

Classification	Pass
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¹ Indoor grill tested to EN 60335-2-78 (Particular requirements for outdoor grills) for comparative purposes only, as it was considered that the product may be used outdoors

Appendix I

Terms of Reference for the Intertek Electrical Safety Assessment

The Intertek electrical safety assessment consists primarily of visual inspections and basic electrical safety tests. It relies on the test engineer's knowledge and expertise of testing a broad range of electrical products. However, the inspections and tests are based upon the latest safety standards. The headings below are taken from EN 60335-1:2002 (Safety of household and similar electrical appliances. Part 1: General requirements) and generally form the criteria for the screening test. The clause headings may change if another standard is used, e.g. EN 60598 for Luminaires.

The Intertek safety assessment is most usefully applied where a product already complies with a safety standard. It is not suitable for inclusion in a technical file as a justification for CE marking under the Electrical Equipment (Safety) Regulations 1994.

Marking and instructions - Inspection of *pictorial* and *written warnings* on the appliance and in the instructions. Look for CE and approval marks.

Protection against access to live parts - Inspection for *access* to live parts after removal of *detachable parts*. **From EN 60335-1: clause 8**

Leakage current and electric strength - Carry out *leakage current* test and *electric strength* test. **From EN 60335-1: clause 13 and 16.3**

Stability and mechanical hazards - Inspect for *access* to *dangerous moving parts*.

Mechanical strength - Carry out *impact* and/or *drop* tests

Construction - Inspect for *basic* constructional requirements

Internal wiring - Inspect for *basic* wiring requirements.

Supply connection and external flexible cords - Inspect cord for marking of *cross sectional area* and *cord anchorage*. Carry out tests in cases of doubt.

Provision for earthing - Inspect *earthing* system and carry out *25 Amp* test if applicable.

Clearances, creepage distances and solid insulation - Inspect *creepage* and *clearances*, measure only in cases of doubt.

Other tests and inspections

- **Functional check** – Carried out at rated voltage after product has stabilized.
- **Plug and fuse** - Inspect pins of plug-in devices and plugs for fuse rating, wiring and BS1363 mark

Appendix II

General Advice For The Safe Use of Outdoor Grills Under Test

- Read all instructions and warnings carefully
- Ensure that the product is marked IPX4 (Protection against splashed water)
- Do not locate any part of the product outdoors, if it is designated for “indoor use” only
- Ensure that the product is placed on a level surface, where appropriate
- If the product is designated for “outdoor use”, ensure that the product is supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA.

End of report