

TECHNICAL REPORT

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DATE: 6th October 2008

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08035405 Issue 1

Toasters: Safety Assessments

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Introduction

The Electrical Safety Council commissioned Intertek to carry out electrical safety assessments on a selection of toasters under the general safety provisions of the relevant safety standards.

In particular, Intertek purchased six samples for testing, which are 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 September and October 2008.

Summary

One of the samples tested failed the Intertek safety assessment with a standard departure where live parts were accessible with a standard test probe. An observation was also made for the crumb tray. The remaining five samples passed the Intertek safety assessment with no departures or observations being recorded. General advice for the safe use and installation of these product types can be found in [Appendix II](#).

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

Intertek sample code	Product type	Assessment results
EB2	Two slice toaster	Pass
EL1	Cool touch two slice toaster	Pass
EM1	White four slice toaster	Pass
EN1	Cool touch two slice toaster	Pass
EO1	Two slice toaster	Pass
EP1	Stainless steel two slice toaster	FAIL +observation

Project Samples

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



Sample code EB2



Sample code EL1



Sample code EM1



Sample code EN1



Sample code EO1



Sample code EP1

Electrical Safety Assessment

The samples were 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 amendments A1, A2, A11 and A12
- EN 60335-2-9:2003 + A2 Household and similar electrical appliances – Safety –
Part 2-9: Particular requirements for grills, toasters and similar portable cooking appliances,
incorporating amendment A12

The terms of reference for the Intertek safety assessment can be found in Appendix I.

Electrical Safety Assessments

Two slice toaster (Sample code EB2)



Figure 1 Sample EB2

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 60335-2-9:2003 + A2 Household and similar electrical appliances – Safety –
Part 2-9: Particular requirements for grills, toasters and similar portable cooking appliances,
incorporating A12

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
Clearances, creepage distances and solid insulation	Pass

Additional testing

Jammed ejector mechanism (19.102. EN 60335-2-9)	Pass
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Cool touch two slice toaster (Sample code EL1)**Figure 2** Sample EL1**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 60335-2-9:2003 + A2 Household and similar electrical appliances – Safety –
Part 2-9: Particular requirements for grills, toasters and similar portable cooking appliances,
incorporating A12

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
Clearances, creepage distances and solid insulation	Pass

Additional testing

Jammed ejector mechanism (19.102. EN 60335-2-9)	Pass
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White four slice toaster (Sample code EM1)**Figure 3** *Sample EM1***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 60335-2-9:2003 + A2 Household and similar electrical appliances – Safety –
Part 2-9: Particular requirements for grills, toasters and similar portable cooking appliances,
incorporating A12

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
Clearances, creepage distances and solid insulation	Pass

Additional testing

Jammed ejector mechanism (19.102. EN 60335-2-9)	Pass
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Cool touch two slice toaster (Sample code EN1)



Figure 4 Sample EN1

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 60335-2-9:2003 + A2 Household and similar electrical appliances – Safety –
Part 2-9: Particular requirements for grills, toasters and similar portable cooking appliances,
incorporating A12

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
Clearances, creepage distances and solid insulation	Pass

Additional testing

Jammed ejector mechanism (19.102. EN 60335-2-9)	Pass
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Two slice toaster (Sample code EO1)**Figure 5** *Sample EO1***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 60335-2-9:2003 + A2 Household and similar electrical appliances – Safety –
Part 2-9: Particular requirements for grills, toasters and similar portable cooking appliances,
incorporating A12

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
Clearances, creepage distances and solid insulation	Pass

Additional testing

Jammed ejector mechanism (19.102. EN 60335-2-9)	Pass
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Stainless steel two slice toaster (Sample code EP1)



Figure 6 Sample EP1

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 60335-2-9:2003 + A2 Household and similar electrical appliances – Safety –
Part 2-9: Particular requirements for grills, toasters and similar portable cooking appliances,
incorporating A12

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

Additional testing

Jammed ejector mechanism (19.102. EN 60335-2-9)	Pass
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Sample code EP1 - Electrical Safety Assessment Departure

Protection against access to live parts

EN 60335-2-9, clause 8.1.1

The above clause states:

For toasters having a crumb tray, the test finger is not applied through the crumb-tray opening to live parts that are disconnected by the operation of a double pole switch. However, it shall not be possible to touch these parts with test probe 41 of IEC 61032.

For the sample, as tested, it was possible to touch live parts with test probe 41 of IEC 61032 (See Figures 7 & 8).



Figure 7 Application of test probe



Figure 8 Test probe touching live parts

Observation

The crumb-tray had sharp edges that might create a hazard during user maintenance (see Figure 9).

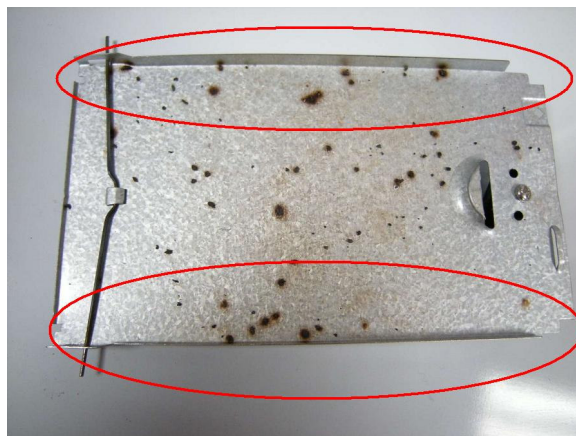


Figure 9 Sharp edges of crumb-tray.

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 toasters

- Read carefully all instructions and warnings provided with the product
- Bread may jam in the toaster and burn. Therefore, it should not be used near or below combustible items such as curtains and kitchen cupboards
- Ensure that the toaster's plug is removed from the socket-outlet before cleaning and maintenance operations
- Use the toaster only in the upright position, as stated in the manufacturer's instruction manual
- Do not attempt to clear obstructions in the bread slots using a knife or similar utensil

End of report