

JIS

JAPANESE INDUSTRIAL STANDARD

Electric Toasters

Ⓔ **JIS C 9207**—1988

Translated and Published

by

Japanese Standards Association

Printed in Japan

In the event of any doubt arising,
the original Standard in Japanese is to be final authority.



1. Scope

This Japanese Industrial Standard specifies electric toasters of pop-up type hereinafter referred to as the "toasters", and electric oven toasters, hereinafter referred to as the "oven toasters", of rated power consumption not exceeding 1.5 kW mainly used for household and similar purposes. However, this Standard is not applicable for toasters in which the temperature, period of time, electric power, etc. are controlled by an electronic system.

Remark: The units and numerical values given in { } in this Standard are based on the traditional unit system and are appended for informative reference.

2. Definitions

For the purpose of this Standard, the following principal definitions shall apply:

- (1) electric toaster An appliance which toasts sliced bread placed in the toasting chamber mainly by heat radiation and then let the bread to pop-up.
- (2) electric oven toaster An appliance which toasts mainly sliced bread and other types (hot dog, French roll, etc.) placed on the toasting net in the box type chamber. The appliance body shall be so constructed that removal of crumbs of bread is easy.
- (3) automatic time switch A switch which is started by operating knobs or buttons, cuts off the current supply to the heating element after lapse of a preset time and automatically returns to the state ready to start again.
- (4) time switch A switch which cuts off the current supply to the heating element after lapse of a time determined by the position of operating knob or button set by the user every time.
- (5) appliance body All the appliance into which such cooker as bread is placed. However, power supply cord is not included.

- (6) toasting chamber A chamber into which such food to be cooked as bread is placed and toasted.
- (7) toaster opening An opening on toasting chamber of a toaster.
- (8) grilliron A netting on which such food to be cooked as bread is placed to separate the food and the heating element.
- (9) bread pan A pan located in the toasting chamber of a toaster to receive bread.

3. Classification

Toasters and oven toasters are classified according to the operation system into three classes as shown in Table 1.

Table 1. Classification

Classification	Operation
Manual type	Such a toaster that placing of bread in toasting chamber, and taking out toasted bread are done manually, and the component which controls current supply to the heating element (e.g. a time switch) must be operated every toasting.
Automatic type	Such a toaster that bread is placed in toasting chamber manually and comes out automatically from the chamber at completion of toasting.
Fully automatic type	Such a toaster that the bread placed at the entrance of toasting chamber goes into the chamber automatically and comes out of the chamber automatically at completion of toasting.

4. Rated Voltage

The rated voltage shall be a.c. single-phase 100 V.

5. Performances

5.1 Voltage Fluctuation Characteristic There shall be no trouble to practical service when the specimen is subjected to the test of 8.2.

5.2 Power Consumption The difference between the power consumption tested as specified in 8.3 and the rated power consumption shall be within the appropriate value in Table 2.

Table 2. Tolerance on Power Consumption

Unit: %	
Rated power consumption	Tolerance
Up to and including 1 kW	± 10
Over 1 kW	± 5

5.3 Insulating Property

5.3.1 Insulation Resistance The insulation resistance shall be not less than 1 M Ω when tested in accordance with the method of 8.4.1.

5.3.2 Dielectric Withstand Voltage The specimen shall withstand the test voltage when subject to the test of 8.4.2.

5.4 Normal Temperature The temperatures at various parts tested as specified in 8.5 shall not exceed the relevant value given in Table 3.

Table 3. Temperature Limit

		Unit: °C
Point of measurement		Temperature
Handle for carrying (excluding ones operated by a man on-current state)	Made of metal, ceramic or glass	65
	Made of others	80
Knob of switch and push button	Made of metal, ceramic or glass	60
	Made of others	75
Handle operated by a man during service	Made of metal, ceramic or glass	55
	Made of others	70
Surface of wood base on which specimen is placed		95
Rectifier	Made of silicon	135
Cord	Natural rubber mixture	60
	Styrene-butadiene rubber mixture and chloroprene rubber mixture	75
	Ethylene-propylene rubber mixture, silicone rubber mixture and chloro-sulfonized polyethylene rubber mixture	90

Table 3 (Continued)

Point of measurement		Temperature
Winding	Class A insulation	100
	Class E insulation	115
	Class B insulation	125
	Class F insulation	150
	Class H insulation	170

Remark: The reference ambient temperature is 30°C.

5.5 Thermostat and Self-Resetting Thermal Cut-Out These components shall comply with the following requirements when tested in accordance with the method of 8.6:

- (1) Make-Break Property No abnormality shall appear at any part.
- (2) Operating Temperature The operating temperature shall be as given in Table 4.

Table 4. Permissible Range of Operating Temperature

Classification		Permissible range
Before make-break test	Thermostat	The average value of the average temperatures at which the circuit opens and the average temperature at which the circuit closes shall lie within $\pm 5^{\circ}\text{C}$ from the set temperature for the ones with temperature setting of less than 100°C , within $\pm 5\%$ for the ones with setting of 100°C to 200°C incl., and within $\pm 10^{\circ}\text{C}$ for the ones with setting of over 200°C .
	Self-resetting thermal cut-out	The average value of temperatures at which the circuit opens shall lie within $\pm 15^{\circ}\text{C}$ from the set temperature.
After make-break test	Thermostat	The average value of the average temperatures at which the circuit opens and the average temperature at which the circuit closes shall lie within $\pm 5^{\circ}\text{C}$ from the value measured before the make-break test for the ones with a temperature setting of less than 100°C and within $\pm 5\%$ of the setting from the value before test, for the ones with temperature setting of 100°C or more.
	Self-resetting thermal cut-out	The average value of temperatures at which the circuit opens shall lie within $\pm 5^{\circ}\text{C}$ from the value measured before the make-break test irrespective of the temperature setting.

5.6 Automatic Temperature Switch and Non-Self-Resetting Thermal Cut-Out These components shall comply with the following requirements when tested in accordance with the method of 8.7:

- (1) Make-Break Property No abnormality shall appear at any part.
- (2) Operating Temperature The operating temperature shall be as given in Table 5.

Table 5. Permissible Range of Operating Temperature

Classification		Permissible range
Before make-break test	Automatic switch	The average value of temperatures at which the circuit opens shall lie within $\pm 10^{\circ}\text{C}$ from the set temperature
	Non-self-resetting thermal cut-out	The average value of temperatures at which the circuit opens shall lie within $\pm 15^{\circ}\text{C}$ from the set temperature.
After make-break test		The average value of temperatures at which the circuit opens shall lie within $\pm 5^{\circ}\text{C}$ from the value measured before the make-break test for the ones with a temperature setting of less than 100°C , and within $\pm 5\%$ of the setting from the value before test for the ones with a setting of 100°C or more.

5.7 Automatic Time Switch There shall be no abnormality at any part when the switch is tested as specified in 8.8. The difference between the average operating time based on 10 measurements before the test of 8.8 (1) and that after the test of 8.8 (2) shall be within ± 1 min.

5.8 Time Switch The switch shall show no short-circuit, welding of contacts or other electrical or mechanical abnormality when subjected to the test of 8.9.

5.9 Toasting Characteristic This characteristic shall be as follows:

5.9.1 Toaster

- (1) When the test is carried out in accordance with the method of 8.10.1 (1), each surface of bread slice shall be toasted almost uniform. In the case of automatic type and fully automatic type, the bread slice shall be toasted in brown when the browning control is set to the scale specified by the manufacturer (the centre of scale range if not specified).

When the control is set to the highest position and the lowest position, the colours of toasted bread slices shall differ each other.

- (2) When the specimen is tested as specified in (1) after the automatic temperature switch test of 8.7 and the automatic time switch test of 8.8, the colour of toasted bread slice shall be almost same as that observed in (1).
- (3) In the test carried out as specified in 8.10.1 (2), when the temperature of central part of front surface of the dummy bread or that of rear surface, whichever is the higher, reaches 200°C, the temperature of the opposite surface shall be 150°C or more. However, if the higher temperature does not reach 200°C, the difference from the lower temperature shall be within 50°C.

5.9.2 Oven Toaster

- (1) When the test is carried out in accordance with the method of 8.10.2 (1), each surface of bread slice shall be toasted almost uniform. In the case of automatic type and fully automatic type, the bread slice shall be toasted in brown when the browning control is set to the scale specified by the manufacturer (the centre of scale range if not specified).

When the control is set to the highest position and the lowest position, the colours of toasted bread slices shall differ each other.

- (2) When the specimen of automatic type or fully automatic type is tested as specified in (1), after the automatic temperature switch test of 8.7 and the time switch test of 8.9, the colour of toasted bread slice shall be almost same as that observed in (1).
- (3) In the test carried out as specified in 8.10.2 (2), when the temperature of central part of front surface of the dummy bread or that of rear surface, whichever is the higher, reaches 200°C, the temperature of the opposite surface shall be 150°C or more. However, if the higher temperature does not reach 200°C, the difference from the lower temperature shall be within 50°C.

5.10 Temperature Distribution of Oven Toaster When the test is carried out as specified in 8.11, the difference between the temperature at central measurement point and each of the temperatures at other four measurement points shall be within 30°C in any case.

5.11 Resistance to Thermal Shock of Observation Window Toasters employing glass for observation window shall be so constructed that the glass does not break or does not come out of the toasting chamber even if it breaks when verified by the test of 8.12.

5.12 Endurance of Heating Wire The wire shall not break when subjected to the test of 8.13.

5.13 Endurance of Bread Carriage No trouble detrimental to practical service shall appear when the carriage is tested in accordance with the method of 8.14.

5.14 Endurance of Door and Associated Part The door shall be capable of being used without any trouble detrimental to practical service when subjected to the test of 8.15.

5.15 Endurance of Cord Reel Mechanism When the test is carried out as specified in 8.16, the rate of broken component wires shall not exceed 20 % and no short circuit shall occur.

Further, there shall be no trouble to practical service after this test.

5.16 Bending of Cord Joint

- (1) When the joint between appliance body and cord is tested on toasters without cord reel mechanism as specified in 8.17 (1), the rate of broken component wires shall not exceed 20 %, and no short circuit shall occur.
- (2) When the joint of a non-renewable attachment plug with its integrated cord is tested as specified in 8.17 (2), the rate of broken component wires shall not exceed 20 %, and no short circuit shall occur.

5.17 Resistance to Shock by Falling The specimen shall comply with the requirements given below, immediately after subjected to the test of 8.18. However, this test is not carried out on the appliance of 4 kg or more in mass.

- (1) No live parts shall be exposed in the portion of the toaster excluding the space inside the cover which can be opened closed to remove bread crumbs and the heating element red heated. However, the exposure of live part that does not come in contact with the test finger when tested by the test finger shown in Attached Figure is exempted from the above requirement.
- (2) No short circuit shall appear when the appliance tested is connected to the power supply.
- (3) The insulation resistance between the live parts and the dead metal part liable to be earthed, measured by a d.c. 500 V insulation resistance tester, shall be not less than 0.1 MΩ.

6. Construction

6.1 Construction in General The construction shall comply with the following requirements:

- (1) The appliance shall have no possibility of causing danger under normal service conditions, enough endurance and correct shape, and shall be good in assembling and smooth in operation.
- (2) The appliance body shall not tumble down when inclined from the horizontal plane by an angle of 10 degrees under normal service conditions.
- (3) The portion of metallic cover or box to which arc might reach when the associated switch is opened or closed shall be lined with arc resistant insulating materials.
- (4) Adequate dampproof treatment shall be applied to the portion of appliance which might cause such hazard as burning of components, exposure of live parts due to absorption of moisture.

- (5) The size of toasting chamber opening shall allow entering of a bread slice with dimensions 120 x 110 x 19 mm. However, if the toaster is marked with "for small sized bread only", such a case is an exception.
- (6) The size of grilliron of an oven toaster shall be such that one or more bread slices with dimensions 120 x 110 x 19 mm can be placed on it. However, appliances for bread of special shape only are exempted from the above requirement.
- (7) Appliances shall be so constructed that replacement of heating element and other repair work are easy.
- (8) Appliances with synthetic resin enclosure (excluding ones requiring translucency or transparency, and flexibility, mechanical strength, etc. due to the function are excluded) shall not burn when tested in such a way that a square plane of 9 cm² or more of the outside surface of enclosure (the specimen cut into a square with one side length of 3 cm leaving the original thickness, if there is no square plane of 9 cm² on the enclosure) is inclined by about 45 degrees to the horizontal, the tip of flame about 20 mm long produced by burning Class 1 No. 1 LP gas specified in JIS K 2240 using a gas burner having a nozzle of inner diameter 0.5 mm, with the air inlet closed is applied to the centre of the above surface from the bottom vertically for 5 s and then removed.
- (9) The insulating material used as the enclosure, and the pilot lamp, fuse holders and the like together with their protective covers exposed outside the appliance body shall not cause cracks, splits, or other abnormality which may result in risks of electric shock, fire, etc. when tested in such a manner that a weight of 250 g in mass having a hemispherical face of polyamide with a radius of 10 mm and a Rockwell hardness of HRR 100 as specified in JIS K 7202 is dropped vertically from a height of 20 cm on the said portions or the equivalent shock is applied by means of a hammer head having the same face. However, the pilot lamps, fuse holders, and the like together with their covers which have a surface area not exceeding 4 cm² and do not projected by 10 mm or more from the enclosure of appliance body are exempted from the above requirement.
- (10) Appliances shall be so constructed that water drops produced from steam will not drip on the switch, connector, cord, etc. attached to the appliance body under normal service conditions. However, if such parts are constructed waterproof or to avoid risks of electric shock, fire, etc., such a case is an exception.
- (11) Appliances shall be so constructed that removal of bread crumbs or the like can be done easily.
- (12) If some parts of appliance body are attached or detached such operations shall be easy, sure and safe.
- (13) The noise produced by an appliance shall comply with following: