

ERRATA

Page	Position	Wrong	Correct
14	line 6, 5.3(2.3)	...the test of (2.1)(a)...	...the test of (2.2)(a)...
21	line 5, 7.4.2(1)	...dead metal part...	...the surface of appliance body...
21	line 5, 7.4.2(2)	...dead metal part...	...the surface of appliance body...

Remarks: This errata is for correcting the first edition of this Standard.

Japanese Standards Association

JIS

JAPANESE INDUSTRIAL STANDARD

Electric irons

Ⓒ JIS C 9203—1992

Translated and Published

by

Japanese Standards Association

Printed in Japan



Documents

Document Sharing Hub

21 S

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





JAPANESE INDUSTRIAL STANDARD

J I S

Electric irons

C 9203-1992

1. Scope

This Japanese Industrial Standard specifies electric irons with thermostat or temperature limiting device for household use and for professional use which serve in a single phase a.c. at a rated voltage not exceeding 300 V and a rated power consumption over 100 W up to and including 2 kW (hereafter referred to as "irons").

Remarks 1. The following Standards are cited in this Standard:

JIS C 2520-Wires and rolled wires for electrical heating

JIS C 3301-Rubber insulated flexible cords

JIS C 8303-Plugs and receptacles for domestic and similar general use

JIS C 8304-Small switches for indoor use

JIS C 8358-Appliance couplers for domestic and similar use

JIS H 8617-Electroplated coatings of nickel and chromium

JIS K 2240-Liquefied petroleum gases

JIS K 5400-Testing methods for paints

JIS K 6894-Polytetrafluoroethylene coated dry film

JIS K 7202-Method of Rockwell hardness test for plastics

JIS L 0217-Care labelling of textile goods

JIS S 6006-Pencils and coloured pencils

2. The International Standards corresponding to this Standard are given below.

IEC 335-1: 1991 Safety of household and similar electrical appliances. Part 1: General requirements

IEC 335-2-3: 1986 Safety of household and similar electrical appliances. Part 2: Particular requirements for electric irons

IEC 311: 1988 Methods of measurement of performance of electric irons for household or similar use

3. 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 apply:

- (1) household iron An iron intended mainly for use in general homes.
- (2) professional iron An iron intended mainly for business use in the sewing business, cleaning business, etc. excluding special construction and special purpose ones.
- (3) dry iron This means an iron without steam generating or supplying function, and a dry iron with thermostat may be called an automatic iron.
- (4) steam iron An iron which has steam generating or supplying function.
- (5) steam generation system
 - (a) drip type Such a type that steam is generated by dripping water into the evaporation chamber and the inside of the tank is open to atmosphere.
 - (b) tank type Such a type that steam is generated by heating water inside the tank and all the parts other than steam outlet are enclosed.
 - (c) other types A type in which the drip system and the tank system are integrated, a type in which no steam generator is accommodated in the iron and the iron is connected to an external steam boiler, etc.
- (6) cordless iron An iron which has an attachable and detachable power supply stand.

An iron which can also serve with the cord attached is included in cordless irons.
- (7) stand This means heel stand, or similar device incorporated in the iron, otherwise it is the separate stand delivered with the iron.
- (8) temperature limiting device This means a temperature limiter and a thermal fuse.

3. Rated voltage

The rated voltage of irons shall be a single phase a.c. 300 V or less.

4. Performances

- 4.1 Voltage fluctuation When the voltage fluctuation test is carried out as specified in 7.2, the specimen can be used without practical trouble.

4.2 Power consumption When the test of 7.3 is carried out, the deviation of measured power consumption from the rated power consumption shall fall within the appropriate value of Table 1.

Table 1. Tolerance on power consumption

Rated power consumption	Tolerance %
Up to and including 1 kW	+ 10
Over 1 kW	+ 5 - 10

4.3 Insulation

4.3.1 Insulation resistance When the test of 7.4.1 is carried out, the insulation resistance shall be not less than 1 M Ω .

4.3.2 Insulation resistance at water overflow The insulation resistance of steam iron at water overflow shall be not less than 0.3 M Ω when measured as specified in 7.4.2 (1) and not less than 1 M Ω when measured as specified in 7.4.2 (2).

4.3.3 Dielectric withstand voltage When the dielectric withstand voltage test is carried out as specified in 7.4.3, the specimen shall withstand the test voltage.

4.3.4 Leakage current The leakage current when measured as specified in 7.4.4, shall not exceed 1 mA.

4.4 Temperature

4.4.1 Normal temperature When the normal temperature test is carried out according to 7.5.2, the temperature limiting device shall not operate and the temperature rise of each part shall not exceed the appropriate value of Table 2.

Table 2. Temperature

Unit: °C

Measured place			Temperature
Self standing iron	Surface of wooden plate on which specimen is placed		95
	Leg part	Made of metals, ceramics and glass	95
		Made of others	105
	Middle of handle side face	Made of metals, ceramics and glass	45
		Made of others	60 (70)
Iron with stand	Surface of wooden plate on which specimen is placed	Iron with metal stand	95
		Iron with stand with wooden plate	95
	Leg part of stand with plate of other than wood	Made of metals, ceramics and glass	95
		Made of others	105
	Surface and leg part of stand with wooden plate		105
	Middle of handle side face	Made of metals, ceramics and glass	45
		Made of others	60 (70)
Knob of switch and push button	Made of metals, ceramics and glass		60
	Made of others		75
Surface of each layer of power supply wire in a reel mechanism	Natural rubber compound, polyurethane rubber compound, and p.v.c. compound		60
	Chloroprene rubber compound, styrene butadiene rubber compound, heat-resistant p.v.c. compound and polyethylene rubber compound		75
	Butyl rubber compound and ethylene propylene rubber compound		80
	Chlorosulfonized polyethylene rubber compound, cross-linked polyethylene compound, silicone rubber compound and ethylene tetrafluoride resin compound		90

Table 2. (Continued)

Unit: °C

Measured place			Temperature
Winding	Class A insulation		100
	Class E insulation		115
	Class B insulation	Applicable to winding of rotary machine	120
		Others	125
	Class F insulation	Applicable to winding of rotary machine	140
		Others	150
	Class H insulation	Applicable to winding of rotary machine	165
		Others	170
Rectifier (used in a.c. power supply only)	Made of silicon		135

Remarks 1. In this table the reference ambient temperature is 30°C.

2. The numerical values in parentheses are applicable to irons marked as professional use.

4.4.2 Abnormal temperature When the abnormal temperature test is carried out in accordance with 7.5.3, there shall be no generation of flame or melting⁽¹⁾ of metals on the appliance body, and no deformation which expose the live parts on the enclosure. The wooden base shall not burn and the insulation resistance shall be not less than 0.1 MΩ.

Note ⁽¹⁾ The blister and deformation before the metal melting and dripping are not considered as melting of metals.

4.4.3 Temperature distribution of sole-plate When an iron for household use is tested in accordance with 7.5.4, the difference between the mean value of the mean temperatures of four points on the sole-plate and the mean temperature of each point shall be not more than 20°C.

4.4.4 Heating-up rate When an iron for household use is tested according to 7.5.5, the time necessary for the temperature of middle of sole-plate to reach 150°C above the room temperature shall be within 5 min.

4.5 Guarantee of sole-plate temperature When the test of 7.6 is carried out, the ensured characteristic of sole-plate temperature shall be such that the temperatures at the middle of sole-plate of an iron with thermostat at its highest temperature scale and lowest temperature scale shall not differ from the respective marked temperatures or ensured values by $\pm 20^{\circ}\text{C}$ or more.

Further the highest temperature at the middle of sole-plate shall not exceed 300°C, during this test.

4.6 Steaming characteristic When a steam iron is tested in accordance with the method of 7.7 (for the one provided with steam control, steam is blown out until steam blowing stops by setting the said control at the intermediate position), the steam iron shall not blow out water drops together with steam over its steaming period.

4.7 Pressure safety valve When a tank-type steam iron is tested in accordance with the method of 7.8, its pressure safety valve shall operate.

At such actuation, the tank shall neither leak water nor crack.

4.8 Robustness When the test is carried out in accordance with the method of 7.9, the results shall meet each of the following requirements:

- (1) The live parts will not come in contact with the dead parts due to loosening of screws, terminals, etc.
- (2) Bad flow of current and/or short circuit shall not occur.
- (3) No welding of contacts shall appear.
- (4) No abnormality shall be caused in the operating mechanism.

4.9 Endurance of cord

4.9.1 Flexure of cord joint with appliance body When the test is carried out in accordance with 7.10.1, no short circuit of cord shall occur and the rate of broken component wires shall not exceed 20 %.

4.9.2 Flexure of cord joint in power supply side connector When the test is carried out in accordance with 7.10.2, no short circuit of cord shall occur and the rate of broken component wires shall not exceed 20 %.

4.9.3 Pull out and winding of cord in reel mechanism When the test is carried out in accordance with 7.10.3, no short circuit of cord shall occur and the rate of broken component wires shall not exceed 20 %.

4.10 Thermostat When a thermostat is tested according to 7.11, the results shall comply with the following requirements:

- (1) Make and break There shall be no abnormality on any part.
- (2) Operating temperature The temperature shall comply with Table 3.

Table 3. Tolerance on operating temperature

Classification	Permissible range
Before make and break test	The average temperature taken on the average of the temperatures when the circuit is opened and the average of the temperatures when the circuit is closed shall not differ from the set temperature by more than $\pm 5^{\circ}\text{C}$ for the ones with temperature setting of less than 100°C , by more than $\pm 5\%$ for the ones of 100°C (incl.) to 200°C (incl.), and $\pm 10^{\circ}\text{C}$ for the ones of over 200°C .
After make and break test	The average temperature taken on the average of the temperatures when the circuit is opened and the average of the temperatures when the circuit is closed shall not differ from the measured value before make and break test by more than $\pm 5^{\circ}\text{C}$ of the ones with temperature setting of less than 100°C , and $\pm 5\%$ for the ones of 100°C and more.

4.11 Temperature limiter When a temperature limiter is tested according to 7.12, the results shall comply with the following requirements:

- (1) Make and break There shall be no abnormality on any part.
- (2) Operating temperature The temperature shall comply with Table 4.

Table 4. Tolerance on operating temperature

Classification	Permissible range
Before make and break test	The average of the temperatures when the circuit is opened shall not differ from the set temperature by more than $\pm 15^{\circ}\text{C}$.
After make and break test	The average value of the temperatures when the circuit is opened shall not differ from the value measured before make and break test by more than $\pm 5^{\circ}\text{C}$ for the ones with temperature setting of less than 100°C , and $\pm 5\%$ for the ones of 100°C and more.

5. Construction

5.1 Construction in general The construction of irons shall comply with the following requirements:

- (1) The part of metal cover and box to which the arc is liable to reach when the switch is opened or closed shall be lined with an arc resistant insulating material.
- (2) Moisture proof treatment shall be carried out on the part which is liable to cause such danger as burning of components and exposure of live parts due to moisture absorption.
- (3) When a temperature limiter device is attached, it shall be a non-self-resetting temperature limiter device.
- (4) For irons equipped with a switch, the open state and closed state of the switch shall be indicated at an easily visible place by means of letters, symbols, colours or lights.
- (5) The knobs of switch and thermostat shall not be removed by a force of 30 N {3 kgf}. If there is no possibility of mal-connection at mounting of the apparatus, or if the mal-connection does not result in risks of fire or electric shock, such cases are exceptions.
- (6) Irons of double ratings equipped with rated input voltage change-over mechanism shall comply with the following requirements.
 - (a) The changed-over voltage can be easily understood.
 - (b) Careless change-over shall be impossible.
 - (c) Mal-use or loosening of function of the change-over mechanism shall not result in any hazard.
- (7) For irons equipped with a thermal fuse, the rated operating temperature shall be marked indelibly on the nameplate or on the part in proximity to the fuse mount. However, fuses which can not be replaced are exempted from the above requirement.
- (8) Irons shall be so constructed that the sole-plate will not come in direct contact with a wooden base or floor surface when ironing is rested during use by attaching a support or by employing a self-standing type.
- (9) Self-standing type irons shall not overturn when placed on inclined surface making an angle of 10 degrees to horizontal, in any direction.

Irons with stand shall not slip down from the stand when it is placed on an inclined plane of 15 degrees in any direction.

Further, irons having a tank shall comply with the above requirement in both cases, i.e. the tank is filled with water and the tank is empty.

- (10) When a circuit on the secondary side of insulating transformer or beyond a rectifier containing electron tubes, capacitors, semiconductor elements, resistors or the like, is subjected to the following tests, the component connected to that circuit shall not burn. However, there is no possibility of burning of other parts even if a component connected to the circuit burns, such a case is an exception.
- (10.1) For electron tubes, display lamps, etc., the terminals shall be short-circuited [excluding the case that the provision of 5.2 (3) is complied with] and the heater or filament terminals shall be opened.
- (10.2) For capacitors, semiconductor elements, resistors, transformers, coils or the similar components, the terminals shall be short-circuited or opened.
- (10.3) For the components stated in (10.1) and (10.2) accommodated in a metal case, the terminal and the metal case shall be short-circuited. If there is no possibility that the parts connected to the terminals come in contact with the metal case in a component, such a case is an exception.
- (10.4) When the circuit is shorted or opened in the test of (10.1) to (10.3), the following requirements shall be complied with:
- (a) The dead metal parts liable to be earthed or exposed live parts shall be such that the voltage to earth and the line voltage is not exceeding 30 V for a.c. or 45 V for d.c. or that when 1 k Ω resistors are connected between the live part and the earth, between lines and between dead metal parts and live parts, the current flows through the resistor does not exceed 1 mA unless there is no risk of electric shock at frequencies not less than the power frequency.
- (b) After the test the insulation resistance between the surface of appliance body and the live parts measured by a d.c. 500 V insulation resistance tester shall be not less than 0.1 M Ω . However, the insulation resistance between the surface and such live parts that the voltage to ground and the line voltage are not exceeding 30 V in the case of a.c. and 45 V in the case of d.c. and the current flows through 1 k Ω resistors connected between the live parts and the ground, and between the lines does not exceed 1 mA (it is not necessarily 1 mA or less if there is no risk of electric shock at frequencies not less than the power frequency) is an exception.
- (c) The insulation resistance between the live part and the dead metal part liable to be earthed measured with a d.c. 500 V insulation resistance tester when the circuit is shorted or opened in the tests of (a) and (b) shall be not less than 0.1 M Ω .

- (11) The appliance with an enclosure made of synthetic resin (except the portion which needs translucency or transparency or that which needs flexibility, mechanical strength, etc. due to its function) shall not burn when tested in such a manner, that a flat square part of 9 cm² or more on the external surface of enclosure (a square test piece with a side length of 3 cm and original thickness cut out of the same material if there is no flat part of 9 cm² or more on the enclosure) is inclined about 45 degrees from the horizontal plane, a flame of about 20 mm long is produced by burning the gas of class 1 and No. 1 specified in JIS K 2240 or the equivalent gas using a burner having an inside nozzle diameter 0.5 mm with the air inlet closed, the tip of the flame is applied, from the bottom, to the center of the said plane for 5 s and then removed.
- (12) The mounting part for heating element shall be as follows:
- (a) The mounting face of heating element shall not easily move due to gravity or vibration.
 - (b) The heating wire shall be so mounted that the wire will not touch the dead metal part accessible by a man or dead metal parts connected thereto, if the wire breaks.
- (13) An iron which generates steam in its body shall be so constructed that water drops caused by steam will not splash the switch attached to the body, connector cord, etc. under normal service conditions. If such parts have waterproof construction or are so constructed that no risk of electric shock, fire, etc. are anticipated, the above requirements may not necessarily be fulfilled.
- (14) The noise terminal voltage measured between one line and the earth shall comply with the following requirements:
- (a) The continuous noise terminal voltage shall not exceed the value shown in the right column of Table 5 in correlation with the frequency range given in the left column of the same table. The decibel (dB) means the value calculated based on 1 μ V = 0 dB.

Table 5. Continuous noise terminal voltage

Range of frequency (f)	Continuous noise terminal voltage dB
526.5 kHz $\leq$ f $<$ 5 MHz	56
5 MHz $<$ f $\leq$ 30 MHz	60