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IS 8978 (1992): Electric instantaneous water heaters [ETD
32: Electrical Appliances]



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“Knowledge is such a treasure which cannot be stolen”

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IS 8978 : 1992

भारतीय मानक

पानी गर्म करने के इन्स्टेंट हीटरो की विशिष्टि

(दूसरा पुनरीक्षण)

Indian Standard

**SPECIFICATION FOR ELECTRIC
INSTANTANEOUS WATER HEATERS**

(Second Revision)

UDC 683.97 : 621.365

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

December 1992

Price Group 1

FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Electrical Appliances Sectional Committee had been approved by the Electrotechnical Division Council.

This standard covers general safety and performance requirements.

This standard was first published in 1978 and first revision took place in 1985. This revision has been undertaken in view of the reason that detail of general and safety requirements have now been covered under a separate Indian Standard IS : 302-2-35 (1992) 'Safety of household and similar electrical appliances: Part 2 Particular requirements, Section 35 Electric Instantaneous water heaters'. As per the decision of the third meeting of Electrotechnical Division Council, a separate safety standard on electric instantaneous water heaters has been brought out. The second revision of this composite standards instead of giving details of safety requirements, reference has been made to safety standard IS 302-2-35 (1992). It is intended to cover some more performance requirements in future based on future development within the country as well as at the International Electrotechnical Committee (IEC) level.

For the purpose of deciding whether a particular requirement of this standard is complied with. The final value observed or calculated expressing the result of a test, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (revised)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

**SPECIFICATION FOR ELECTRIC
INSTANTANEOUS WATER HEATERS**

(Second Revision)

1 SCOPE

1.1 This standard covers general, safety and performance requirements of electric instantaneous water heaters up to 3 litres capacity for heating water to a temperature below boiling point. In addition, the provision of 1 of IS 302-2-35 (1992) shall also apply.

2 REFERENCE

2.1 The following Indian Standard is necessary adjunct to this standard:

| <i>IS No.</i> | <i>Title</i> |
|-------------------|--|
| 302-2-35 (1992) | Safety of household and similar electrical appliances; Part 2 Particular requirement, Section 35 Electric instantaneous water heater |

3 TERMINOLOGY

3.1 The provision of 2 of IS 302-2-35 (1992) shall apply.

4 GENERAL REQUIREMENTS

4.1 The provision of 3 of IS 302-2-35 (1992) shall apply.

5 GENERAL NOTE ON TEST

5.1 The provision of 4 of IS 302-2-35 (1992) shall apply.

6 RATING

6.1 The provision of 5 of IS 302-2-35 (1992) shall apply.

7 CLASSIFICATION

7.1 The provision of 6 of IS 302-2-35 (1992) shall apply.

8 MARKING

8.1 The provision of 7 of IS 302-2-35 (1992) shall apply.

8.1.1 The instantaneous water heater may also be marked with the Standard Mark.

9 SAFETY REQUIREMENTS

9.1 The electric instantaneous water heater shall comply with the requirement given in 8 to 32 of IS 302-2-35 (1992).

10 FINISH

10.1 The external finish used in metal components shall be of a heat and moisture resisting nature and shall not be adversely affected by variation in temperature occurring under normal operating conditions.

Compliance shall be checked by visual inspection.

11 OPERATION OF FLOW SWITCH

11.1 The flow switches are caused to operate 10000 times. At the end of test, the flow switch should operate satisfactorily.

12 ENDURANCE

12.1 Electrical instantaneous water heater shall be so constructed that in normal use, there will be no electrical or mechanical failure that might impair compliance with this standard. The insulation shall not be damaged and contacts and connections shall not work loose as a result of heating vibration, etc.

Compliance is adequately checked by the test of other clauses of this standard.

13 TESTS**13.0 Categories of Tests**

Tests are classified as type, acceptance and routine tests.

13.1 Type Tests

The tests specified in Table 1 shall constitute the type tests and shall be carried out on two samples of water heater of the same type and rating selected preferably at random from a regular production lot. Before commencement of the test, the water heaters shall be visually examined and inspected for obvious visual defects in respect of components, parts and their assembly construction, stability, markings, provision of suitable terminals for supply connection, earthing and the effectiveness of screws and connections. The external surface finish shall be even and free from finishing defects.

13.1.1 Criteria of Acceptance

Both samples shall successfully pass all the type tests for proving conformity with the requirements of the standard. If any of the samples

falls in any of the type tests, the testing authority, at its discretion, may call for fresh samples not exceeding twice the original number and subject them again to all tests or to the test(s) in which failure(s) occurred. No failure shall be permitted in the repeat test(s).

13.2 Acceptance Tests

The following shall constitute the acceptance test:

| <i>Test</i> | <i>Clause Reference</i> | |
|---|-------------------------|----------|
| a) Protection against electric shock | 8 of IS 302-2-35 | (1992) |
| b) Input | 10 | do |
| c) Temperature-rise | 11 | do |
| d) Insulation resistance and electric strength at operating temperature | 13 | do |
| e) Moisture resistance | 15 | do |
| f) Insulation resistance and electric strength treatment) (after humidity | 16 | do |
| g) Construction | 22 | do |
| h) Earthing connection | 27 | do |

NOTE — For the purpose of the acceptance test, test humidity treatment is done for 24 hours while conducting the test for moisture resistance as given in 15 of IS 302-2-35 (1992).

13.2.1 A recommended sampling procedure for acceptance test is given in Appendix B of IS 302-1 (1979).

Table 1 Schedule of Type Test
(Clause 13.1)

| SI No. | Test | Clause Reference |
|--------|----------------------------|------------------|
| 1. | Safety requirement | 8 to 32 |
| 2. | Finish | 10 |
| 3. | Operation of flow switches | 11 |
| 4. | Endurance. | 12 |

13.3 Routine Test

The following test shall constitute the routine tests:

| <i>Test</i> | <i>Clause Reference</i> |
|--------------------------------------|-------------------------------|
| a) Protection against electric shock | 8 of IS 302-2-35 (1992) |
| b) High voltage | 13.3.2 of IS 302-1 (1979) |
| c) Earthing connection | 27 of IS 302-2-35 (1992) |
| d) Pressure test | 22.26 of IS 302-2-35 (1992) |

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AMENDMENT NO. 1 JUNE 1993
TO
IS 8978 : 1992 SPECIFICATION FOR ELECTRIC
INSTANTANEOUS WATER HEATERS

(Second Revision)

(General) — Substitute 'IS 302-2-35 (1993)' for 'IS 302-2-35 (1992)'
wherever it appears in the standard.

(ETD 32)

Reprography Unit, BIS, New Delhi, India

AMENDMENT NO. 2 DECEMBER 1999
TO
IS 8978 : 1992 SPECIFICATION FOR ELECTRIC
INSTANTANEOUS WATER HEATERS

(Second Revision)

(Page 1, clause 13.1, first sentence) — Substitute the following for the existing:

‘The tests specified in Table 1 shall constitute the type tests and shall be carried out on one sample of water heater selected preferably at random from a regular production lot’.

(Page 1, clause 13.1.1, line 1) — Substitute the word ‘The sample’ for ‘Both samples’.

(ETD 32)