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Australian Standard 3104—1982

APPROVAL AND TEST SPECIFICATION FOR ELECTRIC PORTABLE IMMERSION HEATERS

PUBLISHED BY THE STANDARDS ASSOCIATION OF AUSTRALIA
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Incorporated by Royal Charter

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THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS or departments were officially represented on the committee entrusted with the preparation of this specification:

Australian Chamber of Commerce

Australian Electrical and Electronic Manufacturers Association

Confederation of Australian Industry

Electrical Apparatus Approvals Authorities

Electrical Contractors Associations of Australia

Electrical Testing Laboratories

Electricity Supply Association of Australia

Electronic Importers Association

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AMENDMENT No 1
to
AS 3104—1982
Approval and Test Specification—
ELECTRIC PORTABLE IMMERSION HEATERS

REVISED TEXT

The 1982 edition of AS 3104 is amended as follows; the amendment should be inserted in the appropriate place.

SUMMARY: The following section of the standard is covered by this amendment: Clause 13.8.

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Page 6. Clause 13.8.

Delete this clause and associated footnote and *substitute* the following:

13.8 Determination of ignitability and combustion propagation. This test shall be carried out in accordance with the provisions of Clause 6.1 of AS 3100 with values in Clause 6.1.1.2 for (a) and (b) as follows:

(a) 750°C for 30 s.

(b) 650°C for 30 s.

This amendment forms part of the specification on publication.

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PREFACE

This edition of this specification, prepared by Committee EL/2, Electrical Approvals Standards, was approved on behalf of the Council of the Standards Association of Australia on 30 October 1981, and was published on 15 March 1982.

It is one of a series of approval and test specifications issued by the Association. These specifications are accompanied by a general specification AS 3100, containing definitions and general requirements for electrical materials and equipment. The purpose of these specifications is to outline conditions which must be met to secure approval for the sale and use of electrical equipment in Australia. Only safety matters and related conditions are covered.

This edition is technically identical with the 1975 edition except that it incorporates Amendments Nos 1 and 2 to that edition which were issued in August 1977 and August 1978 respectively, and includes changes to the following clauses:

Clause 5—modifies requirements for connection.
*Table 1—additional tests.
Clause 12—incorporates present terminology for thermal cutouts.
Clause 13.4—incorporates present terminology for thermal cutouts.
Clause 13.7—incorporates present terminology for thermal cutouts.
†Clause 13.8—adds fire test.
‡Clause 13.9—adds test for d.c. component.

This specification supersedes AS 3104—1975 from date of publication.

The Association desires to call attention to the fact that this specification does not purport to include all the necessary provisions of a contract.

This specification requires reference to the following Australian standard approval and test specifications:

AS 3100	Definitions and General Requirements for Electrical Materials and Equipment
AS 3161	Thermostats and Energy Regulators
AS C109	Appliance Plugs and Appliance Inlet Sockets.

*Test No 15 forms part of the specification on 1 January 1983.
Test No 16 forms part of the specification on 1 March 1983.
†This clause forms part of the specification on 1 January 1983.
‡This clause forms part of the specification on 1 March 1983.

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
APPROVAL AND TEST SPECIFICATION
FOR
ELECTRIC PORTABLE IMMERSION HEATERS

This specification shall be read in conjunction with AS 3100.(See also Clause 3, below.)

1 SCOPE. This specification applies to electric portable immersion heaters, as defined below, which are intended for electrical operation by direct or alternating current at low or medium voltages.

It does not apply to electric jugs, kettles or other vessels/appliances to which heating units are permanently affixed, or to heating units intended for permanent fixing in such vessels, or to aquarium immersion heaters, or to heaters specifically designed for industrial or commercial usage.

2 DEFINITIONS. For the purpose of this specification the following definition applies:

Portable immersion heater (hereinafter referred to as an 'immersion heater')—a portable electrical appliance designed for connection by means of a flexible cord and intended for heating liquid in which it may be immersed.

3 COMPLIANCE WITH SPECIFICATIONS.

3.1 General Requirements of AS 3100. This specification shall be read in conjunction with AS 3100, and the appropriate provisions of AS 3100 shall apply to the construction of the immersion heater and the insulation and/or safeguarding of parts which normally carry current.

3.2 Specific Requirements of this Specification. An immersion heater shall be deemed to comply with this specification only if it complies with all the requirements of this specification and passes the relevant tests specified herein.

3.3 Requirements of Other Specifications. Equipment and components incorporated in an immersion heater which are depended upon for safety shall comply with the appropriate requirements of any relevant approval and test specification unless such requirements are varied herein.

4 ENCLOSURE OF ELEMENTS. The element of the immersion heater shall be completely enclosed in a metal sheathing of such material and form as will ensure that, under normal operating conditions, liquid in which it is immersed will not gain access to the element or live parts.

The element shall be located centrally within the sheathing in such a manner as will prevent relative movement or contact between the element and the sheathing. Loose filling without spacers shall not be deemed sufficient protection against contact between the element and the casing.

A spacer, bushing or filling shall be provided at the point of egress of the element from the sheathing.

The outer sheathing shall be made from a corrosion-resistant alloy or, alternatively, be plated or otherwise treated in a manner which will prevent undue corrosion under normal conditions of use.

5 MEANS OF CONNECTION. The immersion heater shall be provided with one of the following means of connection to the supply:

(a) A Type C appliance inlet socket complying with AS C109. The socket shall be so arranged that temperature of the inserted plug will not exceed the limiting temperatures specified in AS 3100 for the materials used, when the heater is operated under the conditions prescribed in Clause 13.4.

(b) A power supply cord which shall be assembled with the appliance by one of the following methods:

Type X attachment.
Type M attachment.
Type Y attachment.
Type Z attachment.

6 FLEXIBLE CORD AND CONNECTING PLUG. Where required by Clause 4.4 of AS 3100, the immersion heater shall be provided with a supply flexible cord and connecting plug.

Any flexible cord provided with the immersion heater for the purpose of connecting it to the supply shall comply with AS 3191 and—

(a) be of the unkinkable or light duty sheathed type for heaters rated at 1200 W or less, or of a type not inferior to an ordinary duty sheathed type for heaters rated in excess of 1200 W;

(b) be correctly wired in accordance with the appropriate requirements of Clause 4.4 of AS 3100;

(c) have a free length of not less than 1.8 m.

7 IMMERSION HEATERS WITH EARTHING FACILITIES. All exposed metal (see Clauses 2.21 of AS 3100) of an immersion heater shall be in effective electrical contact with an earthing terminal or contact and the arrangement shall be such as to comply with the test of earthing connection specified in Table 1.

The earthing terminal, if any, shall be marked in accordance with Clause 7.4 of AS 3100.

8 IMMERSION HEATERS WITH DOUBLE INSULATION. Every immersion heater with double insulation shall comply with the appropriate requirements of AS 3100.