AS 1056.3—1991

Australian Standard®

Storage water heaters

Part 3: Specific requirements for water heaters with composite shells

[Title allocated by Defence Cataloguing Authority: HEATER, WATER, ELECTRIC (Storage Type, Composite Shell) NSC 4410, 4520]

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The following interests are represented on Committee EL/20;

Australian Consumers Association

Australian Electrical and Electronic Manufacturers' Association

Australian Gas Association

Confederation of Australian Industry

Electricity Supply Association of Australia

Engineering and Water Supply Department, S.A.

Heat Exchange Water Heater Manufacturers Association

Metal Trades Industry Association of Australia

Additional interests participating in preparation of Standard:

Material suppliers

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PREFACE

This Standard was prepared by the Standards Australia Committee on Electric Water Heating Appliances to supersede the 1985 edition, to remove outdated references, to recognize changes to referenced Standards and to introduce a revised procedure for determining the solubility of vitreous enamel (see Appendix A, Paragraphs A2 and A7).

This Standard is one of a series covering storage water heaters, the other Standards in the series being as follows:

AS
1056 Storage water heaters
1056.1 Part 1: General requirements
1056.2 Part 2: Specific requirements for water heaters with single shells
1056.4 Part 4: Calculations of energy consumption

CONTENTS

STANDARDS AUSTRALIA

Australian Standard
Storage water heaters

Part 3: Specific requirements for water heaters with composite shells

1 SCOPE This Standard specifies requirements for water heaters with composite shells made from steel and protected as follows:

(a) With a metallic insert.

(b) With a bonded vitreous enamel lining.

(c) With bonded plastics lining.

2 APPLICATION The requirements of this Standard are in addition to those in AS 1056.1.

3 REFERENCED DOCUMENTS The following Standards are referred to in this Standard:

AS
1056 Storage water heaters
1056.1 Part 1: General requirements
1449 Wrought alloy steels–Stainless and heat-resisting steel plate, sheet and strip
1566 Copper and copper alloys–Rolled flat products
1627 Metal finishing–Preparation and pretreatment of surfaces
1627.4 Part 4: Abrasive blast cleaning
1627.9 Part 9: Pictorial surface preparation standards for painting steel surfaces
2812 Welding, brazing and cutting of metals–Glossary of terms.

4 SHELLS WITH METALLIC INSERTS

4.1 Non-ferrous metallic insert

4.1.1 *Material* The insert shall be made from one of the following materials complying with AS 1566:

(a) Silicon bronze alloy A, Designation AS 1566/655.

(b) 90/10 copper-nickel, Designation AS 1566/706.

(c) Phosphorus deoxidized copper, high residual phosphorus, Designation AS 1566/122.

NOTE: Other materials may be considered by the Standards Australia Committee EL/20 for possible inclusion in this Standard on production of satisfactory evidence of long-term suitability.

4.1.2 *Thickness* When checked at 20 representative points on the walls and ends, the insert shall have a thickness of not less than 0.50 mm.

4.1.3 *Conformity with steel shell* The insert shall be in intimate contact with the steel shell over virtually its entire surface.

4.2 Steel shell The shell shall be made from a grade of steel that will consistently ensure satisfactory jointing with the insert.

4.3 Jointing

4.3.1 *Welding of the shell* The welds shall be of a quality not inferior to that produced by the submerged-arc process. The longitudinal seam shall be butt welded.

Weld beads and edges against which the insert will bear shall be finished so that local stresses are not imposed upon the metallic insert.

4.3.2 *Jointing of the insert* Joints in the insert shall be either welded or brazed. The jointing shall be finished so that intimate contact with the steel is ensured.

4.4 Watertightness Where tested with water at the maximum working pressure, the insert shall not leak. Where a shell has openings for the expulsion of air from the interspace or for the detection of leaks, these openings shall be sealed at the conclusion of this test and while the shell is subjected to pressure.

To provide access to the interspace, shells intended for type testing shall be fitted with at least three sealable openings of 3 mm to 5 mm diameter (see Figure 1).