

AS 2984—1987

Australian Standard<sup>®</sup>

---

**SOLAR WATER HEATERS –  
METHOD OF TEST  
FOR THERMAL PERFORMANCE –  
OUTDOOR TEST METHOD**

---

This Australian Standard was prepared by Committee CS/28, Solar Water Heaters. It was approved on behalf of the Council of the Standards Association of Australia on 28 August 1987 and published on 5 October 1987.

---

The following interests are represented on Committee CS/28:

Australian Gas Association  
CSIRO, Division of Energy Technology  
Department of Consumer Affairs, N.S.W.  
Department of Housing and Construction  
Department of Industrial Relations and Employment, N.S.W.  
Department of Mines and Energy, N.T.  
Department of Resources and Energy  
Electricity Supply Association of Australia  
Energy Authority of New South Wales  
Engineering and Water Supply Department, S.A.  
Gas and Fuel Corporation of Victoria  
International Solar Energy Society  
Master Plumbers and Mechanical Services Association of Victoria  
Melbourne and Metropolitan Board of Works  
Metal Trades Industry Association of Australia  
Solar Energy Industries Association of Australia  
University of New South Wales  
Victorian Solar Energy Council

---

**Review of Australian Standards.** To keep abreast of progress in industry, Australian Standards are subject to periodic review and are kept up to date by the issue of amendments or new editions as necessary. It is important therefore that Standards users ensure that they are in possession of the latest edition, and any amendments thereto.

Full details of all Australian Standards and related publications will be found in the Standards Australia Catalogue of Publications; this information is supplemented each month by the magazine 'The Australian Standard', which subscribing members receive, and which gives details of new publications, new editions and amendments, and of withdrawn Standards.

Suggestions for improvements to Australian Standards, addressed to the head office of Standards Australia, are welcomed. Notification of any inaccuracy or ambiguity found in an Australian Standard should be made without delay in order that the matter may be investigated and appropriate action taken.

---

AS 2984—1987

Australian Standard<sup>®</sup>

---

**SOLAR WATER HEATERS –  
METHOD OF TEST  
FOR THERMAL PERFORMANCE –  
OUTDOOR TEST METHOD**

---

First published as AS 2984 ..... 1987
---------------------------------------

PUBLISHED BY STANDARDS AUSTRALIA  
(STANDARDS ASSOCIATION OF AUSTRALIA)  
1 THE CRESCENT, HOMEBUSH, NSW 2140

ISBN 0 7262 4743 X

## PREFACE

This Standard was prepared by the Association's Committee on Solar Water Heaters. It is one of a series of Standards relating to solar hot water systems prepared in response to requests from the solar industry and the CSIRO. The proposal for a Standard dealing with outdoor testing of systems was made by the Energy Authority of N.S.W.

Outdoor testing of solar water heaters has been carried out over many years in Australia, by Government and industrial organizations and educational establishments, as a tool in research, and product development. Much recent work has been done by the School of Mechanical and Industrial Engineering at the University of N.S.W. for the purpose of comparison of different systems, and it is this work which forms the basis of this Standard. The assistance received from the University of N.S.W. is gratefully acknowledged.

The thermal performance of a household solar water heating system depends on external factors such as –

- (a) climate;
- (b) total daily load and monthly variation of daily load;
- (c) time of loads during the day; and
- (d) temperature of the cold inlet and hot outlet water.

Testing of solar water heating systems using a solar simulator has been defined in AS 2813. The range of systems that can be tested in a simulator is governed by the degree to which the simulator can produce the irradiation incidence angle patterns specified in AS 2813. To test collectors that are influenced strongly by irradiation incidence angle (e.g. evacuated tube and stationary concentrator collectors) AS 2813 specifies that the simulator has to be capable of operating through angles from 10 degrees to the horizontal to the maximum solar elevation.

As few test sites in Australia will have access to a simulator that satisfies the requirements of AS 2813, this Standard outdoor test method is proposed as an alternative.

### © Copyright — STANDARDS AUSTRALIA

Users of Standards are reminded that copyright subsists in all Standards Australia publications and software. Except where the Copyright Act allows and except where provided for below no publications or software produced by Standards Australia may be reproduced, stored in a retrieval system in any form or transmitted by any means without prior permission in writing from Standards Australia. Permission may be conditional on an appropriate royalty payment. Requests for permission and information on commercial software royalties should be directed to the head office of Standards Australia.

Standards Australia will permit up to 10 percent of the technical content pages of a Standard to be copied for use exclusively in-house by purchasers of the Standard without payment of a royalty or advice to Standards Australia.

Standards Australia will also permit the inclusion of its copyright material in computer software programs for no royalty payment provided such programs are used exclusively in-house by the creators of the programs.

Care should be taken to ensure that material used is from the current edition of the Standard and that it is updated whenever the Standard is amended or revised. The number and date of the Standard should therefore be clearly identified.

The use of material in print form or in computer software programs to be used commercially, with or without payment, or in commercial contracts is subject to the payment of a royalty. This policy may be varied by Standards Australia at any time.

## CONTENTS

	<i>Page</i>
SECTION 1. SCOPE AND GENERAL	
1.1 SCOPE .....	4
1.2 APPLICATION .....	4
1.3 REFERENCED DOCUMENTS .....	4
1.4 DEFINITIONS .....	4
1.5 NOTATION .....	5
SECTION 2. TEST EQUIPMENT AND INSTRUMENTATION	
2.1 GENERAL DESCRIPTION .....	6
2.2 INSTRUMENTATION .....	6
SECTION 3. TEST METHOD	
3.1 SCOPE OF SECTION .....	8
3.2 PRELIMINARY EVALUATION .....	8
3.3 LOAD CAPACITY .....	8
3.4 NO-SOLAR TEST .....	8
3.5 SOLAR TEST .....	9
3.6 ANALYSIS OF TEST RESULTS .....	11
3.7 PRESENTATION OF RESULTS .....	11
APPENDICES	
A ANALYSIS OF TEST DATA .....	12
B IDENTIFICATION DETAILS FOR SOLAR WATER HEATERS SUBMITTED FOR TYPE TESTING .....	15
C NOTATION .....	20

This is a free preview. Purchase the entire publication at the link below:

[Product Page](#)

- 
- Looking for additional Standards? Visit Intertek Inform Infostore
  - Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation
-