

Australian Standard[®]

**Materials for solar collectors for
swimming pool heating**

**Part 2: Flexible or plasticized
polyvinyl chloride**

This Australian Standard was prepared by Committee CS/28, Solar Water Heaters. It was approved on behalf of the Council of Standards Australia on 9 December 1992 and published on 13 April 1993.

The following interests are represented on Committee CS/28:

Australian and New Zealand Solar Energy Society
Australian Gas Association
Department of Mineral Resources, N.S.W.
Department of Mines and Energy, N.T.
Department of Primary Industries and Energy
Electricity Supply Association of Australia
Energy Research Centre
Engineering and Water Supply Department, S.A.
Master Plumbers and Mechanical Services Association of Victoria
Metal Trades Industry Association of Australia
Renewable Energy Authority, Victoria
Solar Energy Industries Association of Australia
University of New South Wales

Additional interests participating in preparation of Standard:

Plastics Institute of Australia
Rubber Manufacturers Association of Australia

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PREFACE

This Standard was prepared by the Standards Australia Committee on Solar Water Heaters and supersedes AS 2369.2(Int)—1990, *Materials for solar collectors for swimming pool heating, Part 2: Flexible or plasticized polyvinyl chloride*.

Heating of swimming pools to extend the swimming season is becoming popular in the cooler regions of Australia, and solar heating is being recognized as cost effective for this purpose. A Standard for solar heating of swimming pools has been prepared, and in addition to this it was felt that a Standard specifying the necessary properties of collectors was needed. The use of elastomeric collector strips is common both for household and public pool heating and this part of the Standard deals with polyvinyl chloride.

The revision of AS 2369.2(Int)—1990 was requested by the Solar Energy Industry Association of Australia following a number of failings in the field of ultra-thin plasticized PVC collectors and this revised document, now a full Standard, incorporates changes to the pressure levels of the burst pressure at hot ambient and 45°C temperature.

Another change from the previous edition is the inclusion of a plasticizer compatibility test in the list of requirements for PVC tubing.

The requirements of this Standard are based on well established test methods for elastomeric materials. The tests have been selected for their relevance to collector performance and service life.

Although this Standard cannot qualify service life due to the difficulty in defining and controlling the many factors which affect solar collectors, the criteria used herein are based on the performance of materials that have been shown to have a satisfactory performance in pool heating applications.

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STANDARDS AUSTRALIA

Australian Standard

Materials for solar collectors for swimming pool heating

Part 2: Flexible or plasticized polyvinyl chloride

1 SCOPE This Standard specifies the properties of polyvinyl chloride (PVC) used in the manufacture of unglazed collectors intended for solar heating of swimming pools. The Standard is applicable to products used for collectors which take the form of flexible tubing, or absorber strips comprising water passages joined by a web.

The requirements of this Standard are based on the assumption that the solar pool heating systems in which these materials are used will be installed in accordance with AS 3634, and that the pool water will be maintained in accordance with AS 3635.

2 REFERENCED DOCUMENTS The following documents below are referred to in this Standard:

AS

- 1180 Methods of test for hose made from elastic materials
- 1180.5A Method 5A: Hydrostatic pressure—Burst test
- 1180.5B Method 5B: Hydrostatic pressure—Proof test
- 1683 Method of test for elastomers
- 1683.11 Method 11: Tension testing of vulcanized rubber
- 1683.15.2 Method 15.2: Durometer hardness
- 1683.20 Method 20: Standard temperatures, humidities and times for conditioning and testing test pieces
- 3633 Private swimming pools—Water quality
- 3634 Solar heating systems for swimming pools

ASTM

- G53 Recommended practice for operating light- and water-exposure apparatus (fluorescent UV—Condensation type) for exposure of non-metallic materials)
- D3291 Standard practice for compatibility of plasticisers in poly(vinyl chloride) plastics under compression

3 GENERAL The material is required to be evaluated under three conditions—

- (a) as manufactured (qualification tests);
- (b) after exposure to chemicals; and
- (c) after accelerated weathering.

Conditions (b) and (c) are not cumulative and are applied to separate test pieces.