AS/NZS 3662:2005
(Incorporating Amendment Nos 1, 2 and 3)

Australian/New Zealand Standard™

Performance of showers for bathing

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee WS-032, Water Efficient Appliances. It was approved on behalf of the Council of Standards Australia on 16 February 2005 and on behalf of the Council of Standards New Zealand on 28 February 2005.
This Standard was published on 28 April 2005.

The following are represented on Committee WS-032:

AUSTAP
Australian Electrical and Electronic Manufacturers Association
Australian Industry Group
Building Research Association of New Zealand
Consumer Electronics Suppliers Association
Consumers' Federation of Australia
CSIRO Manufacturing & Infrastructure Technology
Department of Natural Resources and Environment (Victoria)
Department of the Environment and Heritage (Federal)
Environmental Protection Agency (Queensland)
Master Plumbers Association of NSW
Master Plumbers, Gasfitters and Drainlayers New Zealand
Ministry for the Environment New Zealand
National Plumbing Regulators Forum
New Zealand Engineering Federation
New Zealand Water & Waste Association
Property Council of Australia
Queensland Brassware Industry Advisory Panel
South Australian Water Corporation
Victorian Water Industry Association
Water Services Association of Australia

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about joint Australian/New Zealand Standards can be found by visiting the Standards Web Shop at www.standards.com.au or Standards New Zealand web site at www.standards.co.nz and looking up the relevant Standard in the on-line catalogue.

Alternatively, both organizations publish an annual printed Catalogue with full details of all current Standards. For more frequent listings or notification of revisions, amendments and withdrawals, Standards Australia and Standards New Zealand offer a number of update options. For information about these services, users should contact their respective national Standards organization.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Please address your comments to the Chief Executive of either Standards Australia or Standards New Zealand at the address shown on the back cover.

This Standard was issued in draft form for comment as DR 04440.

AS/NZS 3662:2005
(Incorporating Amendment Nos 1, 2 and 3)

Australian/New Zealand Standard™

Performance of showers for bathing

First published in Australia as AS 3662—1989.
Jointly revised and designated as AS/NZS 3662:1993.
Previous edition AS/NZS 3662:1996
Fourth edition 2005.
Reissued incorporating Amendment No. 1 (February 2006).
Reissued incorporating Amendment No. 2 (January 2009).
Reissued incorporating Amendment No. 3 (March 2010).

Jointly published by Standards Australia, GPO Box 476, Sydney, NSW 2001 and Standards New Zealand, Private Bag 2439, Wellington 6020

ISBN 0 7337 6642 0

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee WS-032, Water Efficient Products, to supersede AS/NZS 3662:1996.

This Standard incorporates Amendment No. 1 (February 2006), Amendment No. 2 (January 2009) and Amendment No. 3 (March 2010). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

The Plumbing Code of Australia requires that water efficient products be certified to WaterMark Level 2.

The objective of this Standard is to specify the requirements for showers for bathing purposes. Shower types include—

A2 (a) showerhead(s) fastened to fixed arm(s);

(b) showerhead(s) fastened to pivotal arm(s);

(c) showerheads with integral mixing valves;

(d) hand-held showers connected to flexible hoses—

(i) supported by a fixed wall handset holder;

(ii) attached to a slide rail; or

(iii) mounted on a holder attached to a bath/shower mixer.

A2 Where showers are sold together with other components (e.g., a fixed or pivot arm, a flexible hose with or without a flow controller or mixing valve), which could affect the performance of the shower, such components will need to be attached to the shower for testing. Where showers are sold together with components that would not affect their performance (e.g., tap top assemblies, or other components), such additional components need not be attached to the shower for testing.

A2 NOTES:

1 For prefabricated bathroom modules that include showerheads(s), refer to ATS 5200.050.

2 Showers, when sold as an assembly with tapware, may be WaterMark approved under AS/NZS 3718.

This revision includes—

(a) an extended definition of a shower to include relevant components;

(b) amended test procedures;

(c) requirements for shower hoses; and

(d) a method for determining the effective diameter of non-circular-shaped showerheads.

The term ‘normative’ has been used in this Standard to define the application of the appendix to which it applies. A ‘normative’ appendix is an integral part of a Standard.

CONTENTS

Page

FOREWORD

As showers are significant consumers of water, this Standard has been revised to encourage the development of showers that will give a comfortable and effective shower even at low water flow rates.

A shower is essentially a tactile experience and what may look like a good shower may not be confirmed by use. The following factors, among others, influence the quality of a shower:

(a) *Water flow rate*

(b) *Temperature drop* Showers with significant temperature drops, which increase with distance from the head, could present a scalding hazard and may require greater heated water usage to achieve acceptable water temperatures. The ability of water to rinse soap is temperature sensitive; therefore, showers with a minimum temperature drop (drop in water temperature from the showerhead to the lower limbs) are more effective for ablution purposes.

The criterion for temperature drop in this Standard is based on what can be readily achieved by many showers currently on the market.

A2 (c) *Temperature stability* Showers with restriction in unequal pressure installations are more susceptible to fluctuations in supply pressure, which could present a scalding or thermal shock hazard to the bather.

A2 (d) *Spray pattern* The spray pattern of a shower has two main features. The first is the shape of the cone of water emitted and the second is the distribution of spray within the cross-sections of the cone. Showers with wide cones can display two undesirable features: if the water spray is evenly distributed throughout the cone, a significant temperature drop may be felt with increasing distance from the shower spray head; alternatively, if the spray is concentrated around the perimeter of the cone, the shower may have a hollow feel. In either case, the shower may present difficulties when washing and rinsing the lower body extremities.

This Standard maintains a requirement for the angle of spread from the shower spray head of a cone. Consumer acceptance tests on different showerheads indicated a preference for shower spray heads with a mean spray spread angle of between 3° and 7°.

A2 (e) *Comfort and effectiveness* Although the velocity of spray is a factor in the comfort and effectiveness of a shower, a test for velocity of spray is not included in this Standard. High velocity sprays are uncomfortable and force the bather to reduce the flow rate, which may be beneficial for water conservation, but may also result in the shower becoming ineffective.

Tests conducted on showerheads to aid in the development of this Standard indicated the following with respect to spray exit velocity:

Velocity	**Effect**
2–3 m/s	Comfortable spray
4–6 m/s	Stimulating spray
>10 m/s	Painful spray

No overall test for the comfort and effectiveness of a shower has yet been included in this Standard, of which velocity is a factor. Research is underway to develop such criteria, especially for showers with flow rates less than 7.5 L/m.

NOTES:

1 It is anticipated that the next revision of this Standard will include appropriate tests.

2 Showers are required to meet the requirements of the Plumbing Code of Australia and the New Zealand Building Code.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard
Performance of showers for bathing

1 SCOPE

This Standard specifies requirements for the performance of showers for bathing.

2 COMPLIANCE WITH THIS STANDARD

Demonstration of compliance with the requirements of this Standard shall be in accordance with Appendix A.

3 REFERENCED DOCUMENTS

The following documents are referred in this Standard:

AS/NZS
3500 Plumbing and drainage
3500.0 Part 0: Glossary of terms

A2 6400 Water efficient products—Rating and labelling

ATS
5200 Technical Specification for plumbing and drainage products
5200.037.2 Part 037.2: Flow Controllers

DIN EN
1113 Showers hoses for (PB 10) sanitary tapware

4 DEFINITIONS

For the purpose of this Standard, the definitions below apply. Where terms are not defined in this Standard, the definitions in AS/NZS 3500.0 apply.

4.1 Shower

A showerhead through which water is intended to pass to form a spray for bathing purposes, which may include a fixed or pivot arm, a flexible hose (with or without a flow controller), tap top assemblies, or other components.

A2 **4.2 High pressure shower**

A shower where both the hot water and cold water supply pressures are at 150 kPa or above.

4.3 Low pressure shower

A shower where both the hot water and cold water supply pressures are below 150 kPa.

4.4 Unequal pressure shower

A shower where the hot water supply pressure is below 150 kPa and the cold supply pressure is at or above 150 kPa.

4.5 Nominal flow rate

The water consumption of a shower at the maximum flow setting, which is measured in litres per minute, using a dynamic water pressure of—

(a) 35 kPa in accordance with Appendix G; or