

Australian/New Zealand Standard

**Slip resistance of pedestrian
surfaces**

**Part 2: Guide to the reduction of
slip hazards**

AS/NZS 3661.2:1994

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee BD/44, Fixing of Ceramic Tiles. It was approved on behalf of the Council of Standards Australia on 10 December 1993 and on behalf of the Council of Standards New Zealand on 24 December 1993. It was published on 21 February 1994.

The following interest are represented on Committee BD/44:

Adhesives and Sealants Manufacturers Association of Australia
Australian Chamber of Commerce and Industry
Association of Consulting Engineers, Australia
Building Research Association of New Zealand
Building Services Corporation, Australia
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New South Wales Tile Industry Training Council
TAFE Commission of New South Wales
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Victorian Association of Ceramic Tile Merchants
Works Consultancy Services, Central Laboratories, New Zealand

Additional interests participating in preparation of Standard:

Australian Association of Ceramic Tile Merchants
Australian Stone and Terrazzo Association
Australian Uniform Building Regulations Coordinating Council
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This Standard was issued in draft form for comment as DR 92140.

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Part 2: Guide to the reduction of slip hazards

First published in New Zealand as NZS 5841.1:1988.
Jointly revised and redesignated as Joint Standard
AS/NZS 3661.2:1994.

PUBLISHED JOINTLY BY:

STANDARDS AUSTRALIA
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Homebush NSW 2140 Australia

STANDARDS NEW ZEALAND
Level 10, Standards House,
155 The Terrace,
Wellington 6001 New Zealand

ISBN 0 7262 8169 7

PREFACE

This Standard was prepared by the Joint Australia/New Zealand Standards Committee BD/44 Fixing of Ceramic Tiles. It is the second part of a series on slip resistance.

The series as previously published includes the following:

AS/NZS
3661 Slip resistance of pedestrian surfaces
3661.1 Part 1: Requirements

This Standard is a revision of NZS 5841.1:1988, *Code of practice for the reduction of slip hazards, Part 1: Guidelines for the selection, installation, care and maintenance of flooring and other surfaces.*

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FOREWORD

This is Part 2 of the Joint Australian/New Zealand Standard AS/NZS 3661, *Slip resistance of pedestrian surfaces*. AS/NZS 3661.1 specifies minimum coefficient of friction values for pedestrian surfaces. Regulatory authorities may prescribe higher requirements. To some extent, the slip resistance of surfaces depends on the circumstances of use. The factors involved in the types of flooring and footwear, and contamination thereon, are closely interrelated. This Standard provides guidelines for selection, installation and improvement of existing surfaces, and care and maintenance of these surfaces.

It is generally recognized that falls are the most frequent cause of accidental injury, and slipping on walking surfaces is a very significant factor in pedestrian falls. When the elderly or disabled are involved, the consequences can be most serious. For example, in each of the calendar years from 1982 through 1984, the Accident Compensation Corporation of New Zealand received approximately 7500 claims because of injuries resulting from falls caused by slipping. 60% of these occurred during non-work activities and 40% at work. A significant proportion of the latter were related to manual handling tasks. Compensation paid for each of these years averaged \$9 million, with a somewhat higher proportional cost attributable to non-work slipping accidents. It is also interesting to note that 25% of the compensation payments applied to accidents occurring in the home.

New South Wales workers' compensation statistics for 1991/92 show that falls on the same level are responsible for 14.3% of male occupational injuries, and 20.7% of female injuries. The proportion of the falls due to slipping cannot be identified from the statistics, but a study in Sweden showed that 11% of all occupational accidents involved slipping. A study in North America showed that slips contributed to 70% of falls sustained by the elderly.

It is felt that more positive attention should be given to the selection and care of flooring and footwear in order to reduce slipping hazards and that too much emphasis is given to aesthetic appearance and style by those responsible for the design, selection and use. Appearance and style are only secondary considerations to safety. Consequently, this Standard is intended as a guide to minimize the extent of this problem in selection and care of new materials and also to suggest effective measures for upgrading existing materials to provide more satisfactory slip-resistant characteristics. It must be emphasised that completely non-slip conditions are an ideal which cannot realistically be achieved but much improvement can and should be accomplished using selected materials, treatment and footwear as recommended in this Standard.

The following general recommendations, particularly for disadvantaged pedestrians, should minimize the chances of accidental slipping:

- (a) Footwear should be checked for slip resistance in the home and on surfaces walked on during the day.
- (b) Footwear selected should be most suitable for activities planned during the day.
- (c) Pedestrians should be observant and become knowledgeable about the characteristics of different types of flooring materials and recognize hazardous situations. Floor surfaces are likely to promote slipping if they are smooth, wet or steep. They are particularly likely to be slippery if they are greasy, oily, ice-coated or detergent-wet.
- (d) Pedestrians should be alert and watch for changing surfaces and situations.
- (e) Pedestrians should watch their step and walk defensively if necessary. In order to walk defensively it is necessary to walk slowly and with short paces (less than 600 mm long) with the feet placed slightly apart (preferably with the knees slightly bent); it is desirable to keep the body and any load being carried balanced at all times.

STANDARDS AUSTRALIA/STANDARDS NEW ZEALAND

Australian/New Zealand Standard **Slip resistance of pedestrian surfaces**

Part 2: Guide to the reduction of slip hazards

1 SCOPE This Part gives guidance on the selection, installation, care and maintenance of flooring and other surfaces in domestic, public and commercial areas for the purpose of reducing the slip hazard to pedestrians, including people with disabilities.

NOTE: It is impossible to completely remove the risks of persons slipping on pedestrian surfaces. There is a wide range of flooring surfaces available for use in buildings (both in interior and exterior areas) and the slip-resistance characteristics of these surfaces will vary enormously depending on factors such as weather conditions, activities carried out in the building (e.g. there is a high risk of slipping in kitchens and bathrooms where water and other liquids may be spilled and also in hospitals and other health care facilities such as veterinary surgeries), cleaning methods used on the surface, and the type of footwear that the person is wearing.

2 APPLICATION The use of this Standard as a general guideline is recommended for most situations, applying to all walking surfaces which can contribute to the risk of slipping.

NOTE: This Standard, with the exception of Sections 5 and 6, comes under the jurisdiction of the New Zealand Building Act and is intended as a solution to the corresponding provisions of the New Zealand Building Code.

However, it is acknowledged that this Standard is not designed to be used in special industrial situations calling for unique solutions to specific slipping problems.

3 REFERENCED DOCUMENTS The following document is referred to in this Standard:
AS/NZS
3661 Slip resistance of pedestrian surfaces
3661.1 Part 1: Requirements

4 SELECTION OF PEDESTRIAN SURFACES FOR SLIP-RESISTANT CHARACTERISTICS

4.1 Functional considerations In selection of flooring surfacing materials, it is essential that the slip-resistant characteristics be appropriate for the specific area of application. All surfaces become more slippery when wet or contaminated with greasy or oily substances. It is also essential to consider transition areas where the unwary pedestrian may be prone to slipping if there is significant variation in the material characteristics. For example, in certain work areas, such as food preparation, or in public places having direct access from the outside, particular consideration is necessary.

4.2 Cleaning considerations In certain facilities, such as food processing and preparation areas, hygienic considerations are of prime importance and necessitate frequent and thorough cleaning. (Refer to local food and health regulations.) Since liquid cleaning is normally used, adequate drainage shall be provided and surfaces likely to be wetted in service shall be made to avoid ponding under foot by grading or other suitable methods. The most suitable cleaning equipment shall be kept in a good clean workable condition and be available for immediate use at all times.



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