

Australian Standard<sup>®</sup>

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**Lightweight protective helmets (for  
use in pedal cycling, horse riding  
and other activities requiring  
similar protection)**

**Part 1: Basic performance  
requirements**

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This Australian standard was prepared by Committee CS/14, Safety Helmets for Sport and Recreation. It was approved on behalf of the Council of the Standards Association of Australia on 22 July 1986 and published on 4 August 1986.

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The following interests are represented on Committee CS/14:

Attorney General's Department  
Australian Federation of Consumer Organizations  
Australian Harness Racing Council Inc.  
Australian Jockey Club  
Australian Manufacturers of Safety and Protective Helmets Council  
Australian Retailers Association  
Australian Sports Medicine Foundation  
Bicycle Federation of Australia  
Confederation of Australian Industry  
Consumer Affairs Bureau, Qld  
Consumer Affairs Council, Tas  
Department of Defence  
Department of Health  
Department of Local Government, W.A.  
Department of Sport and Recreation, Vic.  
Department of Transport  
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Royal Melbourne Institute of Technology  
State Bicycle Committee, N.S.W.  
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First published . . . . .	1977
Second edition . . . . .	1982
Third edition . . . . .	1986

Incorporating:  
Amdt 1 — 1987  
Amdt 2 — 1988  
Amdt 3 — 1997

## PREFACE

This edition of this standard was prepared by the Association's Committee on Safety Helmets for Sport and Recreation, to supersede AS 2063, Part 1 — 1982.

The major change in this edition is the requirement that helmets for pedal cyclists comply also with AS 2063.2. Otherwise, the technical content of the standard remains unchanged, although alterations have been made to some clauses to clarify their intention.

Consideration is currently being given to changing the Standard to require that helmet peaks be flexible or detachable.

Concern has been expressed that rigid peaks may cause rotational injuries to the head or neck during some falls, and facial injuries if they shatter or break off. However, lack of information on the benefits and hazards of peaks for different sports has led to difficulty in determining appropriate limits for size and flexibility. While further information is sought on peaks generally, the subcommittees looking at design requirements for particular sports will be working towards the specification of suitable peaks for each activity.

Committee CS/14 was originally constituted to prepare a standard for helmets for pedal cyclists. A request for a standard for horse and pony riders' helmets was received at the same time and the committee decided that the hazards and protection required by both sports were similar and that one standard would suffice. Furthermore, it was considered that helmets complying with the standard would be suitable for use in other activities in which light-weight, compact head protection was required.

The standard is based on the standard for protective helmets for vehicle users but the performance requirements have been reduced to give the maximum protection possible given the restrictions on bulk and mass. Part 1 of the standard covers only requirements affecting the ability of a helmet to safely mitigate a blow to the head. Specific requirements for particular sports will, where necessary, be covered by separate parts of the standard. Nevertheless, helmet manufacturers should consult with the appropriate sporting bodies to ensure that a helmet meets the design requirements of the sport or sports for which it is intended to be used.

Specific requirements for helmets for pedal cyclists are covered by AS 2063.2. Requirements for equestrian helmets are under consideration.

Helmets and face protectors for ball and puck games such as cricket, baseball, ice hockey and lacrosse are not intended to be covered by AS 2063 and a separate standard for these items is in the course for preparation.

In view of the nature of this standard, it is strongly recommended that manufacturers and purchasers should make use of the scheme operated by the Standards Association of Australia (see Note to Clause 7) whereby the product may bear the certification mark of the SAA.

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## FOREWORD

Helmets which comply with this standard are considered suitable for activities where the wearer is likely to be thrown or to fall from a height, particularly while mobile. They are not, however, to be used by motor cyclists on public roads or in other public places where the various State and Territory Traffic Regulations require the use of helmets complying with AS 1698, nor are they to be used for high-speed sports such as motor cycle racing and car racing.

Occupants of passenger cars seeking personal head protection might find helmets complying with AS 1698 too heavy and bulky for everyday use, whereas helmets complying with AS 2063.1, might well be acceptable. The degree of protection provided, however, could not realistically be as great as that provided for in AS 1698 even though the impact forces might be similar.

The protection given by a helmet depends on the circumstances of the accident and the wearing of a helmet cannot always prevent death or long-term disability. A proportion of the energy of an impact is absorbed by the helmet, thereby reducing the force of the blow sustained by the head. The structure of the helmet may be damaged in absorbing this energy and any helmet which sustains a severe blow should be replaced even if damage is not apparent.

To achieve the performance of which it is capable and to ensure stability on the head, a helmet should be as closely fitting as possible consistent with comfort, and it must be securely fastened, with the retaining strap under tension at all times.

## STANDARDS ASSOCIATION OF AUSTRALIA

## Australian Standard

for

**LIGHTWEIGHT PROTECTIVE HELMETS (FOR USE IN PEDAL CYCLING, HORSE RIDING AND OTHER ACTIVITIES REQUIRING SIMILAR PROTECTION)****PART 1—BASIC PERFORMANCE REQUIREMENTS**

**1 SCOPE.** This standard specifies the basic performance requirements for impact attenuation, penetration resistance, strength of the retention system and its attachment points, and peripheral vision clearance for lightweight protective helmets intended to mitigate the adverse effects of a blow to the head.

Marking requirements are also specified.

**NOTES:**

1. A helmet complying with this standard may incorporate special features designed to suit its use in specific activities.
2. Additional requirements for helmets for pedal cyclists are specified in AS 2063.2.

**2 OBJECT.** The object of the standard is to specify the basic head protection required to minimize risk of injury through shock and penetration of the brain in activities such as pedal cycling, pony or horse riding, or other sporting or recreational activities where a person's head is subject to similar risks. It specifies only those design requirements which are relevant to that head protection.

**3 REFERENCED DOCUMENTS.** The following standards are referred to in this standard:

- AS 1698 Protective Helmets for Vehicle Users
- AS 2063 Lightweight Protective Helmets (For Use in Pedal Cycling, Horse Riding and Other Activities Requiring Similar Protection)  
2063.2 Helmets for Pedal Cyclists
- AS 2512 Methods of Testing of Protective Helmets  
2512.1 Definitions and Headforms  
2512.2 General Requirements for the Conditioning and Preparation of Test Specimens and Laboratory Conditions  
2512.3.1 Determination of Impact Energy Attenuation—Helmet Drop Test  
2512.4 Determination of Penetration Resistance  
2512.5 Determination of Strength of Retention System and Its Attachment Points  
2512.6 Measurement of Peripheral Vision Clearance

**4 CONSTRUCTION.****4.1 General.**

**4.1.1 Components.** The helmet shall consist of—

- (a) a hard shell;
- (b) a means of absorbing impact energy; and
- (c) a retention system.

All components of this protective system shall be permanently attached to one another.

**4.1.2 Attachment of components.** The helmet shall have

no internal projections likely to cause injury to the wearer in the event of an accident nor shall any of the above components or any accessories be fitted to the helmet in such a way that they are likely to cause injury to the wearer in the event of any accident.

**4.2 Retention system.** The retention system shall be constructed so that when properly fastened the helmet cannot be readily dislodged from its normal position on the wearer's head during an impact.

The retention system shall be designed in such a way that—

- (a) the system includes a retaining strap to be worn under the lower jaw; and
- (b) no component of the system is detachable from the components attached to the helmet.

**4.3 External projections.** Rigid projections and irregularities in the continuous curve of the shell, except for ventilation holes and associated depressions, shall be not greater than 5 mm in height when measured normal to the general outer surface of the shell.

NOTE: Irregularities in the shell should be smoothly faired to minimize resistance to tangential impact forces brought about by friction or snagging.

**4.4 Ventilation openings.** The helmet may have any number of ventilation openings, provided that the projected area normal to the headform surface does not exceed 400 mm<sup>2</sup> for the largest of such openings. It shall not be possible to pass a rod 20 mm in diameter through any of the openings.

**4.5 Helmet positioning index.** The manufacturer shall establish a positioning index for each helmet he manufactures. This index shall be furnished to any person who requests the information, with respect to a helmet identified by manufacturer, model designation and size.

**4.6 Materials.** Except as specifically provided for in this standard, the characteristics of the materials used in the manufacture of helmets shall be established by the manufacturer as being suitable for the purpose, having regard to the provisions of Appendix A.

**5 TYPE TESTING.** For the purpose of type testing at least four helmets of the same size, and representative of production lots, shall be tested for compliance with this standard. Each helmet shall be subjected to a different conditioning procedure specified in AS 2512.2 for ambient temperature, low temperature, high temperature and water immersion.

Helmets shall be in the condition in which they are offered for sale and shall be accompanied by all attachments, including protective eye devices, normally sold with the helmet.

NOTE: Smaller sized helmets of the same type and model may not require additional testing provided that they are not inferior to the