Australian Standard®

Industrial safety helmets

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STANDARDS AUSTRALIA

THE FOLLOWING SCIENTIFIC, INDUSTRIAL AND GOVERNMENTAL ORGANIZATIONS and departments were officially represented on the committee entrusted with the preparation of this standard:

Australian Gas Association

Australasian Institute of Mining and Metallurgy

Bureau of Steel Manufacturers of Australia

Confederation of Australian Industry

Department of Industrial Relations, N.S.W.

Department of Labour and Industry, Vic.

Department of Mines and Energy, N.T.

Department of Productivity

Electricity Supply Association of Australia

Health Commission of New South Wales

Joint Coal Board

Metal Trades Industry Association of Australia

Metropolitan Water Sewerage and Drainage Board, N.S.W.

National Safety Council of Australia (N.S.W. Division)

Safety Institute of Australia

Telecom Australia

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AUSTRALIAN STANDARD

INDUSTRIAL SAFETY HELMETS

AS 1801—1981

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PREFACE

This edition of this standard was prepared by the Association's Committee on Industrial Safety Helmets, under the supervision of the Safety Standards Board, to supersede AS 1801—1975.

Significant variances from the 1975 edition include the following:

(a) Limits on the maximum dimensions of any internal projections have been included.

(b) Recommendations that a range of sizes of helmets be produced have been included.

(c) Provision of a nape strap either as an integral part of, or an attachment to, the headband has been specified.

(d) Recommendations for any cable clip retention systems have been included.

(e) Restriction on helmet mass has been deleted, provided that helmets exceeding 400 g are appropriately labelled.

(f) Requirements for the heat stability of helmet shells have been modified (to align with ISO) and additional requirements for helmets designed for use in hot work environments have been specified.

(g) The restrictions on ventilation holes in shells have been relaxed.

(h) Additional marking requirements have been specified.

(j) For the purpose of type approval of helmets to this standard, the number of test methods for shock absorption has been reduced to one deceleration test. (For quality control and certification tests, see below).

(k) Headforms for impact-testing purposes have been specified as common to those specified in AS 1698 and AS 2063.

(l) Advice on design aspects especially appropriate to helmets used in coal mining has been included in an advisory appendix.

During the preparation of this edition, close attention was given to the requirements of ISO 3873, Industrial Safety Helmets. In accordance with the Association's policy, requirements were aligned with those of ISO 3873 wherever possible. However, in some instances Australian experience with helmets having superior qualities, e.g. resistance to crushing, was acknowledged as preventing acceptance of the lesser requirements specified by ISO. These increased levels of performance, which have been recommended for adoption by ISO, are—

(i) increased levels of resistance to crushing have been retained;

(ii) all helmets are required to provide protection against electric shock hazards;

(iii) metal headforms have been specified for test purposes;

(iv) requirements for nape straps have been included; and

(v) warning markings for safe use and maintenance have been specified.

Although this edition of the standard provides for only one method of testing the shock absorption performance of helmets for type approval purposes, it has been agreed that the previous alternative method and equipment, i.e. aluminium bar method, may be used for quality control purposes, i.e. comparative testing. Advice on the use and limitation of this method is given in Appendix H.

Purchasers may require evidence of compliance of helmets with the provisions of this standard. In this regard attention is drawn to the Notes to Clause 7 dealing with marking of products and the quality assurance and certification scheme operated by the Standards Association of Australia.

This standard requires reference to the following standards:

AS 1270	Hearing Protection Devices
AS 1337	Eye Protectors for Industrial Applications
AS 1698	Protective Helmets for Vehicle Users
AS 1716	Respiratory Protective Devices
AS 1815	Method for Rockwell Hardness Test Part 1—Testing of Metals
AS 1816	Method for Brinell Hardness Test Part 1—Testing of Metals
SAE J211b	Recommended Practice for Instrumentation for Impact Tests

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Australian Standard
for
INDUSTRIAL SAFETY HELEMETS

1 SCOPE. This standard specifies requirements for industrial safety helmets for protection of the wearer's head in building and construction, underground working, quarrying, shipbuilding, forestry, and occupations with similar hazards.

It deals with the construction and materials of the helmet shell and head harness, mechanical strength of the shell, and finish of the helmet.

Methods of test referred to in this standard are set out in Appendices A to F inclusive.

Additional requirements appropriate to helmets specially designed for use in coal mining are included in Appendix G.

NOTE: Additional optional protection may be required by particular industries.

2 APPLICATION. The mandatory requirements of this standard apply to helmets for general use in industry. Additional optional protective characteristics and constructional requirements included in the standard apply only where specially called for.

For helmets for use in coal mining, the appropriate requirements of the standard shall apply but may be modified or supplemented by the optional requirements in Appendix G.

3 DEFINITIONS. For the purpose of this standard, the following definitions apply:

3.1 Industrial safety helmet—a helmet, including all component parts necessary for proper functioning, primarily intended to protect the upper part of a wearer's head against impact. Some helmets may give additional protection.

NOTE: For the purpose of this standard, the term 'helmet' is taken to refer to industrial safety helmets.

3.2 Brim—a rim surrounding the shell which may form a gutter.

3.3 Harness—the complete assembly by means of which the helmet is maintained in position on the head and which may provide a means of absorbing energy. It consists of the following:

(a) *Headband*—part of the harness which surrounds the head in the area of the base of the skull, including the sweatband.

(b) *Cradle*—the fixed or adjustable assembly of the parts of the harness in contact with the head, including the nape strap.

(c) *Cushioning*—material to improve wearer comfort.

3.4 Peak—a permanent or detachable extension of the shell above the eyes.

3.5 Shell—the hard, smoothly finished material that provides the general form of the helmet.

3.6 Protective padding—material contributing to the absorption of kinetic energy during an impact.

3.7 Ventilation holes—holes provided in the shell to permit circulation of air inside the helmet.

3.8 Ventilation gap—open space between headband and shell.

3.9 Helmet accessories—any additional parts for special purposes such as retaining strap, neck protector, nape strap, hearing protectors, lamp bracket, cable clip.

3.10 Wearing height—the vertical distance from the lower edge of the headband to the highest point of the head or headform.

3.11 Vertical clearance—the minimum vertical distance between the top of the head or headform and the inside of the shell.

3.12 Lateral clearance—the horizontal distance between the headband and the inside of the shell.

4 MATERIALS.

4.1 Shell Material. The shell of the helmet shall be made of materials that are hard, durable and inherently moisture-resistant.

The material of the shell shall be capable of passing the resistance to ignition test prescribed in Clause 6.8.2. Additionally, helmets specified by the purchaser or claimed by the manufacturer as being suitable for use in hot work environments shall also be capable of passing the thermal performance test prescribed in Clause 6.8.3.

4.2 Headband and Cradle Materials. The characteristics of the materials used in the manufacture of the headband and cradle shall be established by the manufacturer as being suitable for the purpose.

NOTE: The characteristics of the materials used in the manufacture of headbands and cradles should be known not to undergo appreciable alteration under the influence of ageing, or the circumstances of use to which the helmet is normally subjected, such as exposure to sunlight, extremes of temperature, and rain.

Materials used should not support flame propagation and be known not to undergo appreciable alteration arising from contact with perspiration, or skin or hair toiletries. Materials known to cause skin irritations or disorders should not be used.

Sweatbands should be made of a suitable absorptive material and, where appropriate, be designed to minimize retention of dust and grit (see Appendix G).

5 DESIGN AND CONSTRUCTION.

5.1 Design. The helmet shall consist of a hard shell with no rigid internal projections and some means of absorbing energy within the shell, such as protective padding, a harness, or both, which shall be securely attached to the shell.

Means of attachment for accessories shall not project internally into the shell by more than 5 mm, measured from the internal surface of the shell.

All edges shall be smooth and radiused and no part of the helmet or helmet accessories shall have sharp protruding edges.