Designation: AS/NZS 2063:201(X)

Committee: CS-110, Bicycle and Bicycle Accessories

Project ID: 102669

Project Manager: Ron Pulido

Commented [NM1]: PM please check committee name. MDM says Bicycle and bicycle helmets.

Commented [RF2R1]: Committee name is 'bicycles and bicycle accessories'

Commented [RF6R5]: CS-110 – Please advise if you have any objections to the new title.

Helmets for bicycles and skateboards, scooters and other wheeled recreational devices

Stage 03: Drafting

URGENT – HIGH PRIORITY PROJECT.

Publishing Services – please prioritise any requests and escalate to Rachel Frank immediately if there are any roadblocks or issues.

Guidance:

For the attention of CS-110

For the attention of the Editor or Stylist

Synopsis: This Standard specifies the construction and basic performance requirements of lightweight protective helmets to mitigate the adverse effects of a blow to the head. The Standard covers impact energy attenuation, helmet stability, load distribution, strength and effectiveness of the retention system and its attachment points, peripheral vision clearance and marking requirements. Helmets that meet the specification of this Standard may not adequately control hazards and injuries associated with all cycling activities, e.g. BMX and mountain biking.

Editor/PM: Please note, Figure 1 is a screenshot. Please get George to create/move image to drafts folder. Update 14/03: this has been completed [Request 7706]

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Preface

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CS-110, Bicycle and Bicycle Accessories, to supersede AS/NZS 2063:2008, *Bicycle helmets*.

The objective of this Standard is to provide helmet wearers with lightweight helmets that protect against, and reduce the severity of, head injury from hazards associated with cycling, skateboarding and other wheeled recreational activities.

The major changes in this edition are as follows:

(a) The addition to the scope of wheeled recreational devices, such as skateboards, roller skates, roller blades and kick-scooters (see Clause 1.1).

(b) Specification of normative product conformity and batch testing requirements (see Appendix C).

(c) Specification of impact velocities and indicative drop heights (see Clauses 4.4 and 4.5).

(d) Clarification of the intent of test site selection (see Clause 3.6).

The terms "normative" and "informative" are used in Standards to define the application of the appendices to which they apply. A "normative" appendix is an integral part of a Standard, whereas an "informative" appendix is only for information and guidance.

Contents

Commented [RF8R7]: Updated.

Commented [NM9]: PM objective moved to Preface (see SG-006 mandatory Preface text).

Commented [RF10R9]: Noted.

Commented [NM11]: New SG-006 boilerplate text added.

Commented [RF12R11]: Noted.

Commented [NM13]: PM all cross-refs in Standard changed to match content restructure. Please check.

Commented [RF14R13]: Done. Checked all references.

Commented [RF16R15]: Added to scope.

Commented [NM19]: New SG-006 boilerplate text added.

Commented [RF20R19]: Noted

Introduction

Helmets in accordance with this Standard are considered suitable for cycling and other unpowered wheeled recreational device activities where the wearer may be thrown or 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/NZS 1698:2006, *Protective helmets for vehicle users* or UNECE regulation 22, *Uniform provisions concerning the approval of protective helmets and of their visors for drivers and passengers of motor cycles and mopeds*, nor are they to be used for high-speed sports, such as motor cycle racing and car racing.

The protection given by a helmet depends on the circumstances of the impact and the wearing of a helmet cannot always prevent death or injury. 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 that sustains a severe blow needs to 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 needs to be as closely fitting as possible, consistent with comfort, and be securely fastened, with the retaining strap under tension at all times.

In preparing this Standard the Committee considered the issue of angular acceleration management in helmet performance. At present there is no widely available and accepted test method for assessing the performance of helmets in managing angular acceleration that might arise in an oblique impact. The Committee determined that the current Standard is not design restrictive regarding current technologies and designs that are intended to manage head angular acceleration in an impact. The Committee recommended that further work be undertaken to develop and/or adopt a test method so that it can be addressed in a future amendment or revision of the Standard.

In revising the Standard, the Committee considered relevant Australian, New Zealand and international scientific, commercial and grey literature that has been produced over decades on helmet testing and performance.

Commented [RW21]: Should "unpowered" be deleted? We do not use this qualification elsewhere and it is implied in the definition.

Commented [RP22R21]: Should leave "other unpowered".
-Don't want it to be implied by other 'powered recreational devices'. Potentially huge area of items that the committee does not have the scope to endorse.

Commented [RF23R21]: Editor: 'unpowered' needs to remain – do not delete.

Commented [RF25R24]: Noted.

Commented [RW26]: NO "SHOULD" OR "MUST" IN A PREFACE OR INTRODUCTION

Commented [RF27R26]: Noted.

Section 1 Scope and general

1.1 Scope

This Standard specifies the construction and basic performance requirements of lightweight protective helmets intended to mitigate the adverse effects of a blow to the head. This Standard covers impact energy attenuation, helmet stability, load distribution, strength and effectiveness of the retention system and its attachment points, peripheral vision clearance and marking requirements.

Normative product conformity and testing requirements are specified in Appendix C.

This Standard applies to helmets used for recreational activities involving bicycles, including power-assisted bicycles, and unpowered wheeled recreational devices, such as skateboards, roller skates, roller blades and kick-scooters.

Helmets conforming to this Standard may not adequately control hazards and injuries associated with all cycling activities, e.g. BMX and mountain biking.

Commented [RW28]: The definition of "wheeled recreational device" does not include bicycles.

Commented [RF29R28]: Noted.

Commented [NM30]: PM add power-assisted cycles here? Mentioned in introduction to Standard.

Commented [RF31R30]: Noted. Can include.

Commented [RF34R32]: Editor: yes. Will draft a definition for committee review. See definition.

1.2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

NOTE: Documents referenced for informative purposes are listed in the Bibliography.

AS 1609, *Eye protectors for motor cyclists and racing car drivers*

AS 1743, Road signs—Specifications

AS 15194:2016, Cycles—Electrically power assisted cycles—EPAC Bicycles (also known as pedelecs) (EN 15194:2009, MOD)

AS/NZS 2512.1, *Methods of testing protective helmets, Part 1: Definitions and headforms*

AS/NZS 2512.2, *Methods of testing protective helmets, Method 2: General requirements for the conditioning and preparation of test specimens and laboratory conditions*

AS/NZS 2512.3.1, *Methods of testing protective helmets, Method 3.1: Determination of impact energy attenuation—Helmet drop test*

AS/NZS 2512.5.2, *Methods of testing protective helmets, Method 5.2: Determination of strength of retention system—Dynamic strength*

AS/NZS 2512.6, *Methods of testing protective helmets, Method 6: Measurement of horizontal peripheral vision clearance*

AS/NZS 2512.7.2, *Methods of testing protective helmets, Method 7.2: Determination of stability of protective helmets—Dynamic stability*

AS/NZS 2512.8, *Methods of testing protective helmets, Method 8: Measurement of peak deflection*

AS/NZS 2512.9, *Methods of testing protective helmets, Method 9: Determination of load distribution*

1.3 Terms and definitions

For the purpose of this Standard, the definitions given in AS/NZS 2512.1 and those below apply:

1.3.1
accessory
item not permanently attached to the helmet

1.3.2
may
indicates the existence of an option

1.3.3
power-assisted pedal bicycle
~~add text~~
Cycle, equipped with pedals and an auxiliary electric motor, which cannot be propelled exclusively by means of this auxiliary electric motor

1.3.4
shall
indicates that a statement is mandatory

1.3.5
should

Commented [NM37]: PM objective moved to Preface (to conform with new SG-006 structure).

Commented [RF38R37]: Noted.

Commented [NM39]: PM boilerplate text added (SG-006).

Commented [RF40R39]: Noted.

Commented [NM41]: PM withdrawn 21 Sep 2016. Delete or retain?

Commented [RF42R41]: Editor: we need to retain. No change needed.

Commented [RF45]: Editor: please remove this reference if the definition for 1.3.3 is removed.

Commented [NM46]: PM withdrawn 8 Sep 2017. Delete or retain?

Commented [RP47R46]: Need to retain. PM to explore.

Commented [NM50]: PM please add def term text here.

Commented [RF51R50]: Editor / CS-110 please note: As suggested by Andrew M this is taken from AS 15194. As this is an EN adoption, I have asked legal to confirm if there are any copyright considerations for the inclusion. If there is, this definition may need to be left out of this revision to ensure there are no further delays.

indicates a recommendation

1.3.6
supplier
entity including manufacturers or importers suppling helmets which claim conformance with AS/NZS 2063

1.3.7
wheeled recreational device
wheeled device, built to transport a person, propelled by human power or gravity, and ordinarily used for recreation or play

Note 1 to entry: Includes roller blades, roller skates, skateboards, kick-scooters, unicycles or similar wheeled devices.

Note 2 to entry: Does not include golf buggies, prams, strollers or trolleys, motor-assisted devices (whether motor-operated or not), wheelchairs or wheeled toys.

Section 2 Construction

2.1 General

2.1.1 Protective system and components

The protective system of helmets shall consist of —

(a) a means of absorbing impact energy;

(b) a means of distributing load; and

(c) a retention system.

All components of the helmet shall be permanently attached. Removable comfort pads are not considered as part of the protective system.

Commented [RW55]: "Protective system" is not defined or mentioned elsewhere in the Standard. Can we add the text as shown to give this term context?

Commented [RP56R55]: Reject. Adds no further value to the user by trying to 'define' the 'protective system'

2.1.2 Attachment of components

None of the components, or any accessories, shall be fitted to the helmet in such a way that they are likely to cause injury to the wearer in the event of an impact.

2.2 Retention system

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;

(b) the system is adjustable to produce tension on straps between all fixing points when the retaining strap is properly fastened;

(c) any part of the retaining strap that, when properly fastened, contacts the throat on the underside of the wearer's jaw shall not be less than 15 mm wide; and

NOTE: The width requirement reflects the ability of the retaining system to distribute load in the case of an impact. Comfort pads on the retaining strap are not load bearing components.

(d) the system meets the requirements of Clauses 4.3 and 4.6.

2.3 Projections

2.3.1 General

Refer to Figure 1 for illustrations of types of projections and methods of measurement.

2.3.2 External projections

Rigid projections and irregularities on the continuous curve of the outer surface of the helmet, except for ventilation holes and associated depressions, shall not be greater than 5 mm in height when measured normal to the general outer surface of the helmet as shown in Figure 1.

A fairing becomes a projection when the included angle is greater than 45°, as shown in Figure 1. The angle of the projection only applies to flat surfaces that have been faired to the surface of the shell.

NOTE 1: Irregularities in the shell should be smoothed to minimize resistance to tangential impact forces brought about by friction or snagging.

NOTE 2: Clause 2.1.2 applies to mounting points intended for aftermarket accessories in addition to the need to minimize resistance to tangential impact forces brought about by friction or snagging.

Commented [RF58R57]: Noted.

2.3.3 Internal projections

The helmet shall have no internal projections or irregularities likely to cause injury to the wearer in case of an accident.

Commented [NM59]: GEORGE please create a graphic from this screenshot.

Commented [RF60R59]: PSJT request raised – 7706. STYLIST please insert new figure.

Commented [KJ61]: See comment on cover page

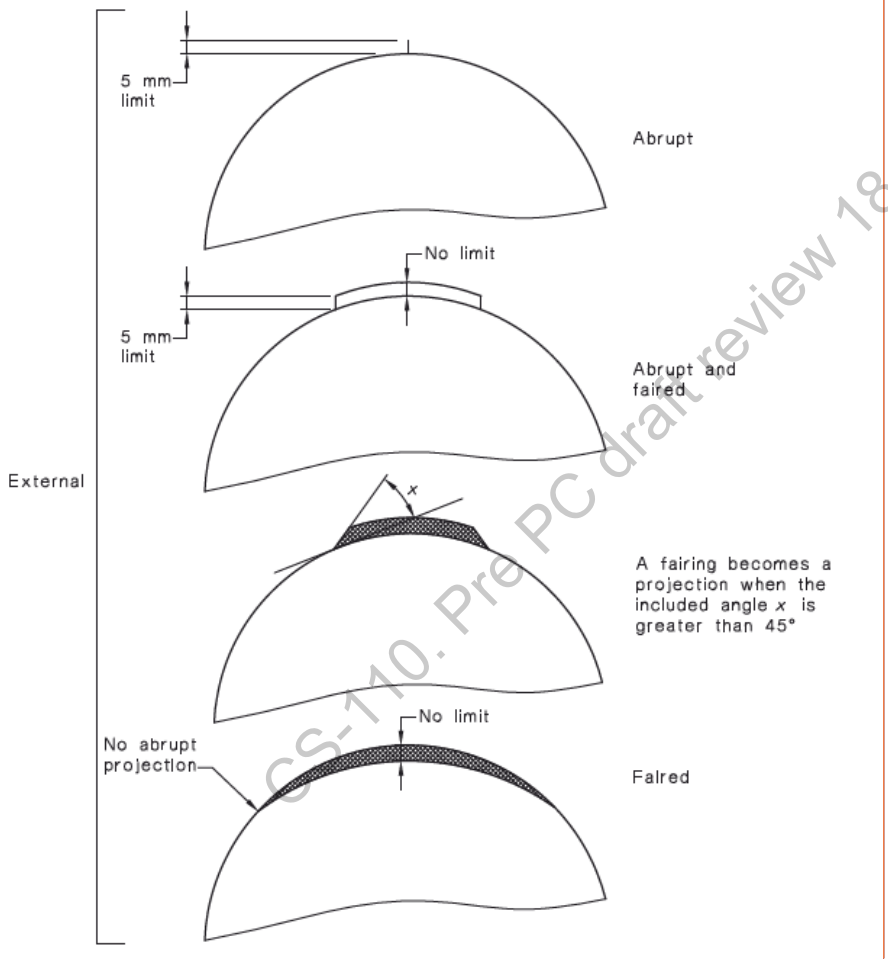

Figure 1 Internal and external projections

2.4 Materials

Except as specifically provided for in this Standard, the characteristics of the materials used in the manufacture of helmets shall be established as being suitable for the purpose.

NOTE 1: Guidance on characteristics of materials used in the manufacture of protective helmets is provided in Appendix A.

NOTE 2: Guidance on the maximum mass of helmets according to headform classification is provided in Appendix B.

2.5 Ventilation

The helmet shall incorporate features designed to transfer heat from the head.

Commented [RW62]: Does this mean that they have to be submitted for the tests in this Standard? If so this requirement is redundant. If not it is vague. Do not attribute roles and responsibilities.

Commented [RP63R62]: Leave this as is. Outside of scope of changes. No intent to make changes here. If it aint broke don't fix it.

Commented [RW64]: Would it be preferable to have a new Clause 2.6 Mass of helmets?

Commented [RF65R64]: No. Please leave as it stands.

Section 3 Test preparation

3.1 General

All tests including determination of the test line shall be performed without comfort pads attached.

When a helmet is tested with size adjustment device attached (e.g. nape strap, neck harness, cradle) the device shall be adjusted to obtain optimum fit (in accordance with the manufacturer's instructions) for all tests using the full headforms.

Commented [RF67R66]: Noted.

NOTE: Type tests provide an indication only of the capacity of a model of helmet to pass subsequent production tests. Manufacturers are advised to conduct extensive exploratory tests on prototype helmets prior to the submission of sample type tests.

3.2 Samples

The helmets shall be supplied to the test facility in the condition in which they are offered for sale and shall be accompanied by all attachments and accessories, including protective eye devices and detachable sun peaks, normally sold with the helmet.

Ten helmets of the same model and size are required. These helmets shall be representative of production lots.

In the absence of a specific Standard for such items, it is recommended that visor and eye protectors recommended for use when cycling should conform to the requirements in AS 1609.

Commented [NM68]: PM withdrawn Standard. Delete or retain?

Commented [RF69R68]: Retain. No replacement to use.

3.3 Test order

Test order shall be as given in Table 1.

Table 1 Test order for helmets

Sample No.	Conditioning	Test
1	Ambient temperature	4.2 Horizontal peripheral vision clearance test 4.7 Peak deflection test 4.3 Dynamic stability test
2	Ambient temperature	4.4 Impact energy attenuation test 4.6 Dynamic strength of retention test
3	Ambient temperature	4.5 Load distribution test 4.6 Dynamic strength of retention test
4	High temperature	4.4 Impact energy attenuation test 4.6 Dynamic strength of retention test
5	High temperature	4.5 Load distribution test 4.6 Dynamic strength of retention test
6	Low temperature	4.4 Impact energy attenuation test 4.6 Dynamic strength of retention test
7	Low temperature	4.5 Load distribution test 4.6 Dynamic strength of retention test
8	Water immersion	4.4 Impact energy attenuation test

		4.6 Dynamic strength of retention test
9	Water immersion	4.5 Load distribution test 4.6 Dynamic strength of retention test
10	Spare sample	

NOTE: It is acknowledged that by requiring more than one test to be performed on each individual helmet, it is possible for earlier tests to have an adverse effect on later test results. Any such effect would not invalidate the later test results.

3.4 Conditioning

The samples shall be subjected to the conditioning procedures specified in AS/NZS 2512.2 for ambient temperature, low temperature, high temperature and water immersion, in the test order specified in Table 1.

3.5 Headforms

Tests shall be conducted on headform sizes A, E, J, M and O (as specified in AS/NZS 2512.1), as appropriate to the helmet's size range, except for the load distribution test (see Clause 4.5).

3.6 Test sites

For both the impact energy attenuation test (Clause 4.4) and the load distribution test (Clause 4.5) the helmets shall be tested at four sites marked prior to conditioning, above the test line, as defined in AS/NZS 2512.1. The distance between any two sites, measured over the surface of the helmet, shall not be less than one fifth of the headform circumference, as measured at the nominal AA line. Impact on the helmets shall be on sites selected to present worse case conditions.

Consider the following when selecting the test site that presents the worst case conditions:
1: Retention system anchorage points, for example, have the potential to fail during impact testing thereby disrupting the integrity of the retention system. If this occurs, the helmet is likely to fail the dynamic strength of retention test.

2: The centre of the impact may be on or above the test line.

3: Consideration for greater coverage at the rear of the head should be given in the design of helmets intended for wheeled recreational device users where rearward falls are more common than for bicycle riders.

4. Selection of the impact sites are typically designated by the test laboratories.

Commented [KJ70]: Editor: Should this note be part of the above table

Commented [NM71R70]: Stylist: No. It is fine underneath the table.

Commented [RW72]: Requirement? Are we specifying that any failure shall not be discounted?

Commented [RP73R72]: No changes. Acknowledgement that helmet needs to continue to use Standard. No issues raised by testing stakeholders.

Commented [RF75R74]: Noted.

Commented [RW78]: The requirement states only above. If it can be on or above the requirement should be changed and this note can be deleted.

Commented [RP79R78]: Leave note as is, the intent is that this is supposed to be more specific than the requirement in the clause. The committee had lengthy discussions on this.

Commented [RP80]: Good to have to avoid an argument with the manufacturer/test lab etc.

Commented [RF81R80]: Editor: please note this inclusion to add more clarity for your comment on note 2.

Section 4 Test requirements

4.1 General

Not more than 10 % by mass of any helmet as tested shall become detached as a result of testing.

4.2 Horizontal peripheral vision clearance

When measured at the basic plane in accordance with AS/NZS 2512.6, the peripheral vision clearance of the helmet shall be not less than 105° on each side of the mid-sagittal plane. In addition, the brow opening of the helmet, and on peaked helmets the outer edge of the peak, shall be at least 25 mm above all points in the basic plane that are within the specified angle or peripheral vision clearance.

4.3 Dynamic helmet stability

When tested in accordance with AS/NZS 2512.7.2, with a drop mass of 10 kg and drop height of 175 mm, the helmet shall not rotate forward by more than 30° to the horizontal, determined by the angle between the reference plane on the helmet exterior and the reference plane on the headform. The helmet shall be tested rear to front.

NOTE: Manufacturers are advised also to consider front to rear stability.

4.4 Impact energy attenuation

When the helmet is tested in accordance with AS/NZS 2512.3.1, using a flat anvil only and an impact speed of 5.42 + 0.05, −0.01 m/s, equivalent to a free-fall drop height of 1500 +30, −5 mm, the headform acceleration shall not exceed 250g peak. In addition, the cumulative duration of acceleration shall not exceed —

(a) 3.0 ms for acceleration greater than 200g; and

(b) 6.0 ms for acceleration greater than 150g.

4.5 Load distribution

When the helmet is tested in accordance with AS/NZS 2512.9 and an impact speed of 4.43 +0.03, −0.01 m/s, equivalent to a drop height of 1000 +15, −5 mm, the following conditions shall be met:

(a) Loading measured by the force transducer shall not exceed 500 N measured over a circular area of 100 mm^2.

(b) The anvil shall not contact the surface of the headform.

4.6 Dynamic strength of the retention system

When tested in accordance with AS/NZS 2512.5.2, using a drop height of 250 + 5, −0 mm, the dynamic displacement shall not exceed 30 mm.

Where the retention system consists of components which can be independently fastened without securing the complete assembly, each such component shall independently conform to the requirements of this Clause.

Commented [NM82]: Richard, this clause has been changed from static helmet stability in the previous revision.

Commented [RF83R82]: Observed.

Commented [RP85R84]: Nothing to do with other wheeled recreational devices. Would be a good idea in general.

Commented [RF86R84]: No change needed.

Commented [NM87]: PM withdrawn. Retain or delete?

Commented [RF88R87]: Retain, no replacement.

NOTE: Additional helmets may be required.

4.7 Peak deflection

When tested in accordance with AS/NZS 2512.8, using a suspended mass of 2 kg for 30 s, the peak shall not break and the deflection of the peak shall not be less than 6.0 mm. Detachable peak may be fixed to the helmet for this test if they are likely to become detached from the helmet during the test.

NOTE: Suitable fixing methods may include gluing and riveting.

Commented [RP90R89]: Deleted and the like.

Section 5 Marking

5.1 On the helmet

Each helmet shall be permanently and legibly marked in letters no less than 1.5 mm high with the following information:

(a) Registered name and address of the manufacturer and/or –

(i) in Australia, the Australian agent.

(ii) in New Zealand, the New Zealand agent.

(b) Shell and liner construction material(s).

(c) Model and brand designation.

(d) An indication of the front or rear of the helmet.

(e) Size.

(f) Month and year of manufacture (may be spelled out, e.g. November 2008, or in numerals, e.g. "11/2008"or "2008/11").

Each helmet shall also be marked in such a manner that it can be easily read without removal of the comfort padding or any permanent part with the following, verbatim, instructions to the user:

(i) "Bicycle helmet — NOT intended for use in motor sports or by motor cyclists."

(ii) "Helmet can be seriously damaged by substances such as petrol, paint, adhesives, or cleaning agents."

(iii) "Make no modifications."

(iv) "Fasten helmet securely under the jaw."

(v) "If helmet shows signs of damage, destroy and replace it."

(vi) "If helmet receives a severe blow, even if apparently undamaged, destroy and replace it."

5.2 Durability of marking

The wording on labels fixed to the product shall be easily legible when rubbed by hand for 15 s with a piece of cloth soaked in water, allowed to dry and rubbed for 15 s with a piece of cloth soaked with liquid domestic dishwashing detergent.

5.3 On the package

If a helmet is packaged, the following information shall be clearly and legibly visible without removal of the helmet:

(a) Manufacturer's registered brand name.

(b) Model designation.

(c) Size.

(d) A list of the sizes available in the model range together with the nominal mass for each size.

(e) The activity/activities for which the helmet is designed.

Commented [RW91]: AS/NZS. Should this be "supplier"?

Commented [RP92R91]: Reject. Intent is for a local (Australian) contact, regardless if it is an overseas manufacturer – would relate to local supplier. May be important for ACCCC.

Commented [RF93R91]: Editor – updated as per discussion/suggestion from Andrew Davies

Commented [RW94]: Would it be helpful to reinforce this by adding quotes around each item as shown?

Commented [RF95R94]: Yes. Thanks.

NOTE 1: The information in Item (e) above may be presented pictorially.

NOTE 2: Manufacturers making a statement of conformance with this Australian/New Zealand Standard on a product, packaging or promotional material related to that product are advised to ensure that such conformance is capable of being verified.

NOTE 3: The manufacturer should ensure that a helmet meets the design requirements of the activities for which it is marked as suitable.

Commented [RW96]: Note 3 overlaps Note 2. Would something like this be better?
Claims of suitability for particular activities should also be capable of being verified.

Commented [RP97R96]: Reject. Leave as is. There is value in the third note elaborating more.

Commented [RF98R96]: Committee do not wish to go with suggested wording above. But can proceed with the tracked in changes.

Section 6 Instructions for use and care

In addition to the marking requirements of Clauses 5.1 and 5.2, each helmet shall be accompanied by a brochure or label that shall include the following, verbatim, in letters no less than 2.0 mm high:

(a) "No helmet can protect the wearer against all possible impacts."

(b) "The helmet is designed to be retained by a strap under the lower jaw."

(c) "To be effective, a helmet must fit and be worn correctly. To check for correct fit, place helmet on head and make any adjustments indicated. Securely fasten retention system. Grasp the helmet and try to rotate it to the front and rear. A correctly fitted helmet should be comfortable and should not move forward to obscure vision or rearward to expose the forehead."

(d) "No attachments should be made to the helmet except those recommended by the helmet manufacturer."

(e) "The helmet is designed to absorb shock by partial destruction of the shell and liner. This damage may not be visible. Therefore, if subjected to a severe blow, the helmet should be destroyed and replaced even if it appears undamaged."

(f) "The helmet may be damaged and rendered ineffective by petroleum and petroleum products, cleaning agents, paints, adhesives and the like, without the damage being visible to the user."

(g) "A helmet has a limited lifespan in use and should be replaced when it shows obvious signs of wear."

(h) "This helmet should not be used by children while climbing or doing other activities where there is a risk of hanging or strangulation if the child gets trapped while wearing the helmet."

Information shall also be provided, in words (with letters no less than 2.0 mm high) and pictures, on the following:

(i) Instructions on the correct method of positioning, adjustment and fastening of the helmet.

(ii) Both the correct and incorrect fitment and wearing position of that approximate type of helmet shall be shown by a graphical representation of minimum height 25 mm. The correct wearing position, in accordance with the manufacturer's instructions, shall be shown in a circle, and the incorrect (showing the helmet tilted back at a grossly incorrect attitude) shall be shown in a circle with a slash through it. The two depictions shall be the same height.

NOTE: Information on graphic representation and the circle with slash are given in AS 1743.

(iii) Cleaning method and agent(s).

(iv) Details regarding suitability of helmet in relation to specific activities.

(v) if not manufactured locally:

(i) in Australia, the Australian distributor/agents' name and address.

(ii) in New Zealand, the New Zealand distributor/agents' name and address.

Appendix A

Commented [RW99]: Can we add quotes as in 5.1. We need to ensure users can differentiate this list from requirements of the Standard as well as ensuring the use the exact wording as required.

Commented [RF100R99]: Noted. Accepted.

Commented [RF102R101]: Noted.

Commented [RF104R103]: Noted.

Commented [RW105]: PM please check that AS 1743 provides the relevant information as the scope of 1743 is much broader than 2342.

Commented [RP106R105]: Leave for PM

Commented [RF107R105]: Checked. And relevant info is included in new reference.

Commented [RW111]: AS/NZS. Should this be "supplier"?

Commented [RP112R111]: Reject. Intent is for a local (Australian) contact, regardless if it is an overseas manufacturer – would relate to local supplier. May be important for ACCCC.

Commented [RF113R111]: Editor – updated as per discussion/suggestion from Andrew Davies

Commented [RF114]: Stylist: please update the sub-clauses format

Commented [RF116R115]: Noted.

Appendix A (informative)
Characteristics of materials used in the manufacture of protective helmets

The characteristics of the materials used in the manufacture of protective helmets should be stable 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. Ultraviolet inhibitors should be used where necessary.

Materials used for those parts of the helmet coming into contact with the skin or hair should be stable on contact with perspiration, or skin or hair toiletries. Materials known to cause skin irritations or skin disorders should not be used.

All metal parts used in the construction of the helmet should be corrosion-resistant or should have a corrosion-resistant finish.

Appendix B (informative)
Recommended maximum mass for helmets

Commented [eXtyles117]: The appendix "Appendix B" is not cited in the text. Please add an in-text citation. A suggested reference had been added in a Note to Clause 2.4. Is that OK?

Commented [RF118R117]: This has been added to clause 2.4

Commented [RP120R119]: Accept. Make consistent with scope and title

As helmets conforming to this Standard are intended for activities using pedal bicycles and other wheeled recreational devices, the bulk and mass of the helmet can be important safety factors as they affect the comfort and movement of the wearer.

The A headform size is suitable for children and the mass of helmets in this size should be as small as possible.

Further research is required before specific mass ranges can be specified. However, the following recommendations are made as a guide to manufacturers who are encouraged to keep the mass within the following limits:

Headform size	Recommended maximum helmet mass g
A	300
E	400
J	500
M	600
O	700

Appendix C (Normative)
Product conformity and batch testing

C.1 Inspection and test schedule

Claims of conformance to this Standard shall be based on tests undertaken on a routine batch-by-batch or continuous basis and those undertaken less frequently for design re-verification purposes.

C.2 Terms and definitions

The following terms and definitions apply in this appendix.

C.2.1 Sample

One of more units of product drawn from a batch or lot, selected at random without regard to quality.

C.2.2 Batch

A clearly identifiable collection of units, manufactured consecutively or continuously under the same conditions, using material or compound to the same specification.

C.3 Batch release/production testing

On-going batch release testing shall be applied to the following:

(a) Impact energy attenuation test (Clause 4.4).

(b) Load distribution test (Clause 4.5).

(c) Strength of retention system test (Clause 4.6).

(d) Marking (Clause 5).

(e) Instructions for use and care (Section 6).

NOTE 1: These clauses have been chosen specifically as they are indicators of a variation in the production processes.

NOTE 2: Laboratories that routinely test the same or similar models from the one supplier may vary the test sites (see Clause 3.6) in order to test a variety of locations.

If the batch contains mixed consumer sizes each size should be progressively sampled. This may be achieved by sampling one size in the first batch, the next size in the second batch and so on, in rotation.

The batch testing shall be as follows:

(i) The frequency of sampling for each new type or model of helmet is 4 helmets per 404 manufactured or part thereof. After successful testing of 10 (10) consecutive batches, the test frequency may be reduced to 4/1004 or part thereof.

In the event of any recorded failure to conform to AS/NZS 2063 requirements for impact energy attenuation and strength of retention system (see clauses 4.4 and 4.6), a re-qualifying cycle of 10 (10) consecutive satisfactory batches shall commence with the next batch produced following the failure. The sampling rate for the re-qualifying period shall be at 4/404 or part thereof.

Commented [KJ121]: Please note, there is a discrepancy in the original ND33 document. All level one headings were marked as B (i.e B1 and B2), despite the fact that this is Appendix C. Please check all cross-references.

Commented [NM122R121]: Cross refs checked and updated.

Commented [RW123]: Verified by? Refer to?

Commented [RF124]: CS-110 – please note that these definitions have been added as boiler plate from SG-006 and should not be changed.

Commented [RF125]: Stylist: Please update the sub-clause numbering and format

Commented [RW128]: Subject of agreement between contracting parties.

Commented [RF129R128]: Text can remain as stands. No changes needed. Discussed with RTL and AD and editor on 12/03.

(ii) If one helmet of a set of four tested fails C.3 (a)–(d), the supplier may either reject the batch that the sample represents or carry out a re-test with a further sample of four helmets of the same size, randomly selected from the same batch or sub-batch. The batch may be released only if all four helmets satisfactorily conform to AS/NZS 2063 requirements for impact energy attenuation and strength of retention system (see clauses 4.4 and 4.6). The focus of any re-testing shall target the point of initial failure, e.g. if a helmet fails for impact energy attenuation on the left front in the cold condition, then the four re-test samples shall be tested in the same area on the helmet and in the same condition as the original failure.

Irrespective of the sampling rates described above, a failure of 2 or more helmets out of any set of 4 submitted or the failure of two clauses in C.3 (a)–(d) on the same helmet shall disqualify the batch represented by the sample to conform to the Standard.

(iii) Depending of the nature of the failure, rejected batches can be re-worked and re-tested to confirm conformance.

C.4 Documentation

C.4.1 The results of the testing program shall be recorded and such records shall be maintained and be made available for inspection for a period of at least 10 years after the date when that last product to which the test program refers was delivered.

C.4.2 Documentation shall include information to be supplied to the purchaser, plus manufacturing process, physical and mechanical properties, inspection and testing, and test procedures.

Commented [RW130]: The highlighted text indicated the specification of acceptance quality levels (AQLS). AQLs should not be specified in a Standard. They are the subject of agreement between contracting parties and/or regulators.

Is this Standard referenced in legislation? Do the regulators specify these AQLs? If not this text should not be requirements

Commented [RF131R130]: Comment no longer valid. Text can remain as it stands. See above comment resolution.

Commented [RF132]: CS-110 please review and advise if this is not the intention

Commented [NM133]: PM confirm.

Commented [RF134R133]: Updated.

Commented [RF135]: Stylist: please update format

Commented [RF136]: CS-110 please note that we strongly recommend that a clause is added on documentation. This is boilerplate text from SG-006.

Commented [RF137]: CS-110 – please advise if 10 years is not suitable and a different period should be specified.

Commented [RF138R137]: Andrew M confirmed that this period is suitable.