

Australian/New Zealand Standard™

Methods of testing protective helmets

Method 5.1: Determination of strength of retention system—Static strength

AS/NZS 2512.5.1:2008

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee CS-097, Testing of Helmets and Visors, to supersede AS/NZS 2512.5.1:1998, *Methods of testing protective helmets*, Method 5.1: *Determination of strength of retention system—Static strength*.

The objective of this revision is to refine the testing procedure.

METHOD

1 SCOPE

This Standard sets out a method for determining the static strength of the retention system of a protective helmet. The method applies to each individual component of a system in which the components can be independently fastened without securing the complete assembly.

2 REFERENCED DOCUMENTS

The following document is referred to in this Standard:

AS/NZS

2512 Methods of testing protective helmets

2512.1 Method 1: Definitions and headforms

2512.2 Method 2: General requirements for the conditioning and preparation of test specimens and laboratory conditions

3 DEFINITIONS

For the purpose of this Standard, the definitions given in AS/NZS 2512.1 apply.

4 PRINCIPLE

With the helmet positioned on a fixed headform, a static tensile force is applied to the retention system. The elongation of the retention system is then measured.

NOTE: The value obtained for the elongation of the retention system is not intended to include any reading due to the compression of any impact-attenuating material (e.g. the crushable liner) or due to the elongation caused by the helmet rotating on the headform.

5 APPARATUS

The apparatus shall include a loading device with a chin stirrup which consists of—

- (a) two parallel, freely rotating rollers each having a diameter of 12.7 ± 1.0 mm, which are separated 75.0 ± 1.5 mm centre-to-centre; and
- (b) a test headform of the dimensions and design specified in AS/NZS 2512.1.

Typical apparatus is shown in Figure 1.

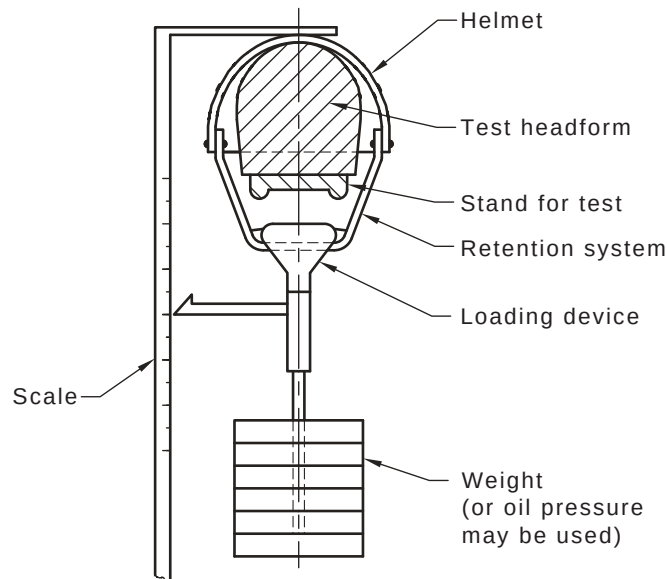


FIGURE 1 TYPICAL APPARATUS FOR RETENTION SYSTEM TEST

6 PROCEDURE

The procedure shall be as follows:

- (a) Condition and prepare the helmet(s) in accordance with AS/NZS 2512.2.
- (b) Ensure the laboratory conditions are as specified in AS/NZS 2512.2.
- (c) Position the helmet on the headform in accordance with AS/NZS 2512.2 and do up the retaining strap to leave approximately 30 mm of webbing through the buckle.

NOTE: Where a securing buckle lies at a corner of the loading device and such position is likely to cause failure of the test, it is permissible to re-position the buckle away from the corner.

- (d) Gradually apply an increasing load to the retention system of the magnitude and duration specified in the product Standard. The force shall be applied normally to the basic plane of the test headform and symmetrical with respect to the mid-sagittal plane.
- (e) Gradually apply an additional test load to the retention system of the magnitude specified in the product Standard, and then maintain this load for the duration specified in the product Standard. The force shall be applied normally to the basic plane of the mid-sagittal plane.

NOTE: The application of the preliminary and additional load is intended to be gradual such that each load does not induce a jolt or shock on the retention system.

- (f) Measure the increase in deflection of the loading device.