

Australian Standard®

Methods of testing protective helmets

Method 9: Determination of resistance to localized loading

1 SCOPE. This Standard sets out a method for determining the ability of a protective helmet to distribute the force of an impact.

2 REFERENCED DOCUMENTS. The following documents are referred to in this Standard:

- AS
2512 Methods of testing protective helmets
2512.2 Method 2: General requirements for the conditioning and preparation of test specimens and laboratory conditions
2512.3.1 Method 3.1: Determination of impact energy attenuation—Helmet drop test

3 PRINCIPLE. An anvil is dropped towards the outer surface of a helmet positioned on a hemispherical headform. The force imparted to a force transducer mounted in the headform is measured.

4 APPARATUS. The following test apparatus is required: (The arrangement of the apparatus is shown in Figure 1.)

- (a) Headform with a hemispherical upper surface of radius 70 mm, made of steel and constructed as shown in Figures 2 and 3.

Measurement of the force generated over a circular area of 100 mm² by means of a calibrated force transducer.

- (b) Drop anvil complying with the following requirements:

- (i) The mass of the anvil and drop assembly shall be $3 + 0.045 - 0$ kg.
- (ii) The anvil is constructed of steel, 250 mm long with the cross-section as shown in Figure 4.
- (iii) The anvil is mounted so that the centre of gravity of the anvil and drop assembly is above the centre of the load measurement area; with the axis horizontal and with the 90 degree edge at the bottom.
- (iv) The impacting surface is to be a ground finish and the edge shall have a radius of 10 mm ± 0.5 .

- (c) Mount as specified in AS 2512.3.

- (d) Means of controlling the direction of free fall.

5 PROCEDURE. The procedure shall be as follows:

- (a) Condition and prepare the helmets in accordance with AS 2512.2.
- (b) Ensure that the laboratory conditions are as specified in AS 2512.2.
- (c) Select test points.
- (d) Position the helmet on the hemispherical headform.
- (e) Drop the impact anvil from the height specified in the product Standard towards the outer surface of the helmet.
- (f) Measure the force imparted to the force transducer.

NOTE: The height is measured from the impactors leading edge to the impact point on the outer surface of the helmet unless the test point is a hole. In that case, measure the height of the anvil from the edge of the hole nearest to the anvil.