STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
METHODS OF TESTING PROTECTIVE HELMETS

AS 2512.2
GENERAL REQUIREMENTS FOR THE CONDITIONING AND PREPARATION OF TEST SPECIMENS AND LABORATORY CONDITIONS

1 SCOPE. This standard sets out conditioning procedures for protective helmets that are to be tested, the way in which the helmets are prepared for test, and the laboratory conditions for the test.

2 CONDITIONING FOR TESTING. Prior to testing, the helmets shall be conditioned as follows:

(a) *Ambient temperature.* At least one helmet shall be conditioned by being exposed to a temperature of 18° C to 25° C for 16 h to 30 h.

(b) *Low temperature.* At least one helmet shall be conditioned by being exposed to a temperature of -5 ± 2° C for 16 h to 30 h in a controlled environmental temperature apparatus.

(c) *High temperature.* At least one helmet shall be conditioned by being exposed to a temperature of 50 ± 2° C for 16 h to 30 h in a circulating air oven.

(d) *Water immersion.* At least one helmet shall be immersed in water at a temperature of 18° C to 25° C for 16 h to 30 h.

(e) *Solvent.* Where specified, test helmets shall be treated as follows:

The entire exterior surface of the helmet shall be treated with approximately 25 mL of the conditioning solvent, being a mixture of 50 percent toluene (any grade in accordance with AS K29 or BS 805) and 50 percent *iso*-octane.

The solvent shall be applied initially to the shell in the areas within 50 mm of the chin strap fixings, for not less than 5 s each, and then to the remainder of the exterior surface for not less than 10 s.

At least 30 min shall elapse before further conditioning and testing.

NOTES:

1. As the solvent components have high, and different, evaporation rates it is necessary to store the solvent in a non-permeable container and to use the solvent before evaporation losses change the proportions of components.
2. Application may be by means of a cotton cloth approximately 150 mm square which has been soaked in the solvent, or by other suitable means.
3. Appropriate precautions need to be taken in handling the solvent, to avoid inhalation, contact with the skin or eyes, and use near any ignition source.

If, during testing, the time out of the conditioning environment for a test helmet exceeds 5 min, the helmet shall be returned to the conditioning environment for a minimum of 3 min for each 1 min out of the conditioning environment or 16 h, whichever is the lesser, before testing is resumed.

3 DETERMINATION OF THE TEST LINE OF THE HELMET. The test line of the helmet shall be determined as follows:

(a) Place the complete helmet to be tested on a reference headform of the largest size which it fits when the headband is adjusted to its largest setting or, if no headband is provided, the largest size corresponding to the interior surface of the helmet. Ensure that the reference headform is firmly seated with the basic and reference planes horizontal.

(b) Apply a static force of $45.0 + 0, -0.5$ N to the apex of the helmet. Centre the helmet laterally and seat it firmly on the reference headform according to its helmet positioning index.

(c) Maintaining the above force and position, draw on the outer surface of the helmet the test line as defined in Clause 3.12 of AS 2512.1.

4 POSITIONING OF THE HELMET FOR TEST. The helmet shall be placed on a test headform of the same size designation as the reference headform used for determining the test line, in a position

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