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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
BASIC ENVIRONMENTAL TESTING PROCEDURES FOR ELECTRONICS AND TELECOMMUNICATIONS PURPOSES

Part 2—TESTS

TEST U. ROBUSTNESS OF TERMINATIONS

This test shall be read in conjunction with Part 1, General

FOREWORD

During normal manufacturing operations, components with either wire or tag terminations may be subjected to forces which can have—

(a) an immediate effect, causing breakage or displacement of the termination;

(b) a long-term effect, by breaking or weakening a seal where the termination enters the body of the component, thereby affecting the useful life of the component, e.g., electrical deterioration due to ingress of moisture.

Again, mounting or fixing screws, threaded studs or holes, or other mounting devices attached to the body of the component, may give rise to similar conditions.

It is therefore considered necessary to ensure that those items which have to endure forces during normal manufacture and use can be checked to prove their suitability for their intended application.

These tests give simple, reproducible methods for determining the ability of terminations and integral mounting devices to withstand such forces.

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SECTION 1—Test Ua1—TENSILE
(Applicable to all types of terminations)

1.1 OBJECT. The object of this test is to determine whether the terminations and attachment of the terminations to the body of the component will withstand the axial stresses that are likely to be applied during normal assembly and handling operations.

1.2 CONDITIONING. The method of conditioning shall be as prescribed in the relevant specification.

1.3 INITIAL MEASUREMENTS. The specimen shall be visually inspected and electrically and mechanically checked, as required by the relevant specification.

1.4 TEST METHOD. (See Fig. 1(a).)

1.4.1 Application. This test applies to all types of terminations. It shall be carried out on all the terminations, except that, where a component has more than three terminations, the specification shall state the number of terminations per component to be tested. The test shall be carried out in such a manner that all the terminations of the component shall have an equal probability of being subjected to the test.

1.4.2 Procedure. With the termination in its normal position and the component held by its body, a force having a value as stated in Table 1 shall be applied to the termination in the direction of its axis and acting away from the body of the component.

The force shall be applied progressively (without any shock) and then maintained for a period of 10 ± 1 s.

1.4.3 Value of Applied Force.

(a) *Wire terminations (circular section or strip) or pins.* The value of the applied force shall be as given in Table 1. For components with oversized wire terminations, the appropriate force shall be given in the relevant specification.

(b) *Other terminations (tag terminations, threaded studs, screws, terminals, etc).* The value of the applied force shall be given in the relevant specification. For type tests and routine tests, the relevant specification shall also state the type and number of components, whether terminations are to be supplied bared or tinned and any other essential information.

1.4.4 Preparation.

1.4.4.1 *Difficulties.* Where the technical features of insulated wires or stranded wires may give rise to difficulties during the stripping, joining or knotting operations that are liable to cause dispute as to the results of the test, such operations shall be in accordance with the relevant specification or, where necessary, with the instructions of the component manufacturer.

1.4.4.2 *Insulated wires.* The termination shall be stripped of the insulation at the point at which the load is applied.

1.4.4.3 *Stranded wires.* The strands shall be united mechanically at the point of application of the load (such as by soldering or knotting) prior to the application of the load.

1.5 FINAL MEASUREMENTS. The specimen shall be visually inspected and electrically and mechanically checked, as required by the relevant specification.

TABLE 1
FORCE TO BE APPLIED TO STANDARD WIRE TERMINATIONS

Nominal cross-sectional area* mm^2	Corresponding diameter for circular-section wires mm	Force N
$S \leqslant 0.05$	$d \leqslant 0.25$	1
$0.05 < S \leqslant 0.07$	$0.25 < d \leqslant 0.3$	2.5
$0.07 < S \leqslant 0.2$	$0.3 < d \leqslant 0.5$	5
$0.2 < S \leqslant 0.5$	$0.5 < d \leqslant 0.8$	10
$0.5 < S \leqslant 1.2$	$0.8 < d \leqslant 1.25$	20
$S > 1.2$	$1.25 < d$	40

*For circular-section wires, strips or pins, the nominal cross-sectional area is equal to the value calculated from the nominal dimension(s) given in the relevant specification.

For stranded wires, the nominal cross-sectional area is obtained by taking the sum of the cross-sectional areas of the individual strands of the conductor specified in the relevant specification.

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