

STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for

**BASIC ENVIRONMENTAL TESTING PROCEDURES FOR
ELECTROTECHNOLOGY**

1989 ed.

PART 1—GENERAL

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SPECIFICATION

1 SCOPE. This standard sets out a series of environmental test procedures designed to assess the ability of electrotechnical products to perform under expected conditions of service at a number of severities.

Although primarily intended for such applications, this standard may be used in other fields of technology as considered appropriate.

The standard is not exhaustive and other environmental tests, specific to the individual types of specimen, may therefore be included in standards specific to that type of equipment or component.

2 OBJECT. The object of this standard is to provide uniform and reproducible environmental, i.e. climatic and mechanical robustness, testing procedures for inclusion in specifications for components and equipment.

These testing procedures have been based upon currently available international engineering experience and judgement and are designed to provide information on the following properties of components and equipment:

- (a) The ability to operate within specified limits of temperature, pressure, humidity, mechanical stress or other environmental conditions and certain combinations of these conditions.
- (b) Ability to withstand storage and transport.

The tests in this standard permit the performance of sample components or equipment to be compared. To assess the overall quality of useful life expectancy of a given production lot, the test procedures should be applied in accordance with a suitable sampling plan and may be supplemented by appropriate additional tests.

To provide tests appropriate to the different intensities of an environmental condition, some of the test procedures have a number of degrees of severity. These different degrees of severity are obtained by varying the time, temperature, air pressure or some other determining factor separately or in combination.

This standard should be used in conjunction with specifications specific to the type of component or equipment, which will define the tests to be used, the required degree of severity for each of them, their order if relevant, and the permissible performance limits. The relevant specifications will also specify the deviations in testing procedures which may be inevitable when applying the tests to the specimens under consideration and it will further specify any special procedures which may be required. In the event of conflict between this basic testing procedure and the specific performance specification, the latter shall prevail.

Test facilities having the size, construction and performance necessary for the proper application of the tests are sometimes specified. In other cases, where required by the purchaser, the capability of the test equipment shall be agreed between the manufacturer and the purchaser.

3 DEFINITIONS. The tests covered by this standard may in themselves consist of a series of operations in order to determine the effect of such a test, or series of tests, on a specimen. For the purpose of this standard the following definitions shall apply:

3.1 Test—the complete series of operations covered by any one heading and will normally consist of the following:

- (a) Preconditioning (where required).
- (b) Initial examination and measurements (where required).
- (c) Conditioning.
- (d) Recovery (where required).
- (e) Final examination and measurements.

Intermediate measurements may be required during conditioning and recovery.

3.1.1 Preconditioning—the treatment of a specimen with the object of removing or partly counteracting the effects of its previous history. Where called for, it is the first process in the test procedure.

3.1.2 Conditioning—the exposure of a specimen to an environmental condition in order to determine the effect of such a condition on it.

3.1.3 Recovery—the treatment of a specimen, after conditioning, in order that the properties of the specimen may be stabilized before measurement.

3.2 Specimen—denotes a component, equipment or other item designated to be tested in accordance with the procedures specified.

NOTE: The term specimen covers any auxiliary parts or systems that are integral functional features of the specimen, e.g. cooling, heating, mechanical isolators.

3.3 Heat-dissipating specimen—for the purpose of climatic testing, a specimen is considered heat-dissipating when the hottest point on its surface, measured in free air conditions, is more than 5°C above the ambient temperature of the surrounding atmosphere after temperature stability has been reached.

NOTE: Measurements required to prove that a specimen can be regarded as non-heat-dissipating can be made in normal laboratory conditions if care has been taken that no outside influence, e.g. draughts or sunlight, affects the measurements. In the case of large or complicated specimens, it may be necessary to make measurements at several points.

3.4 Free air conditions—are conditions within an infinite space where the movement of the air is affected only by the heat-dissipating specimen itself, and the energy radiated by the specimen is absorbed.

NOTE: Theoretically, this definition does not apply to the case where the heating of the specimen is by direct radiation. In practice, however, the definition may be used also for this case.

3.5 Relevant specification—a statement of a set of requirements to be satisfied by a product or material, indicating the procedure necessary to determine whether the requirements given are satisfied.

3.6 Ambient temperature.

3.6.1 For non-heat-dissipating specimens—the temperature of the air surrounding the specimen.

3.6.2 For heat-dissipating specimens—for a heat-dissipating specimen in free air conditions, the temperature of the air at such distance from the specimen that the effect of the dissipation is negligible.

NOTE: In practice, the ambient temperature is taken as the average of temperatures measured at a number of points in a horizontal plane situated 0 to 50 mm below the specimen at half the distance between the specimen and the wall of the chamber or at 1 m distance, whichever is less. Suitable precautions should be taken to avoid heat radiation affecting these measurements.