Australian Standard™

Environmental testing

Part 2.68: Tests—Test L: Dust and sand

Standards Australia

This Australian Standard was prepared by Committee EL-026, Protective Enclosures and Environmental Testing for Electrical/Electronic Equipment. It was approved on behalf of the Council of Standards Australia on 23 October 2003 and published on 28 November 2003.

The following are represented on Committee EL-026:

Australian Chamber of Commerce and Industry
Australian Electrical and Electronic Manufacturer's Association
Electrical Compliance Testing Association
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PREFACE

This Standard was prepared by the Standards Australia Committee EL-026, Protective Enclosures and Environmental Testing for Electrical/Electronic Equipment.

The objective of this Standard is to provide the electrotechnology industry with a complete set of environmental test procedures published as a series under AS 60068 *Environmental testing*. This Standard is Part 2.68 of that series.

This Standard is identical with, and has been reproduced from, IEC 60068-2-68:1994, *Environmental testing – Part 2-68: Tests—Test L: Dust and sand*.

As this Standard is reproduced from an International Standard, the following applies:

(a) Its number does not appear on each page of text and its identity is shown only on the cover and title page.

(b) In the source text 'this international standard' should read 'this Australian Standard'.

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In this Standard, the following print types are used:

– requirements proper: in arial type;

– *test specifications: in italic type;*

– explanatory matter: in smaller arial type.

Any international Standard referenced should be replaced by an equivalent Australian Standard when one is available. The availability of equivalent Australian Standards can be determined either from the Standards Australia catalogue or from the Standards Australia website (www.standards.com.au).

CONTENTS

INTRODUCTION

The tests described in this part of IEC 60068-2 give information on effects for which the relevant specification may specify assessment criteria. Some of such effects are:

a) ingress of dust into enclosures;

b) change of electrical characteristics (for example, faulty contact, change of contact resistance, change of track resistance);

c) seizure, or disturbance in motion of bearings, axles, shafts and other moving parts;

d) surface abrasion (erosion);

e) contamination of optical surfaces; contamination of lubricants;

f) clogging of ventilating openings, bushings, pipes, filters, apertures necessary for operation etc.

Different tests have been specified to consider diversified aspects which may be used to verify constructional integrity of electrotechnical products or to simulate the conditions of operation in service.

The tests differ by the character of the air flow carrying the particulate matter, and by the type of such matter, resulting in a special methodology for each test.

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1 General

This survey indicates the general structure of the dust/sand tests included in this publication. The structuring and a summary of the characteristics of the different tests are given in figure 1 and table 1. It should be noted that the dust test of IEC 60529 has its equivalent in the proposed method La2. See also annex A.

1.1 Scope

This part of IEC 60068-2 specifies test methods to determine the effects of dust and sand suspended in air, on electrotechnical products.

The test methods of this standard are not intended for the testing of air filters. Only method Lc2 is suitable for the simulation of the erosion effects of high velocity (more than 100 m/s) particles.

1.2 Description of test L

The dust and sand test is structured into three groups.

La: *non-abrasive fine dust*. A test which is primarily oriented towards investigation of the seals of the test specimen. The test specimen is exposed to a very fine dust in the form of talc or an equivalent. The effects of temperature cycling resulting in a pressure difference between the inside and outside of the specimen may be reproduced.

Lb: *free settling dust*. A test which is oriented towards investigation of the effects when simulating conditions at sheltered locations. The test specimen is exposed to a low-density dust atmosphere created by the intermittent injection of a small quantity of dust which is allowed to fall by gravity onto the specimen.

Lc: *blown dust and sand*. A test which is oriented towards investigation of the seals and the effect of erosion when simulating outdoor and vehicle conditions. The test specimen is exposed to either a turbulent or a laminar air flow to which is added a quantity of dust, sand or a dust/sand mixture.