

Australian Standard™

**Environmental testing**

**Part 2.70: Tests—Test Xb: Abrasion of  
markings and letterings caused by  
rubbing of fingers and hands**

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.

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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  
Electrical Regulatory Authorities Council  
Electricity Supply Association of Australia  
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## Environmental testing

### Part 2.70: Tests—Test Xb: Abrasion of markings and letterings caused by rubbing of fingers and hands

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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 2.70 of that series.

This Standard is identical with, and has been reproduced from, IEC 60068-2-70:1995, *Environmental testing – Part 2-70: Tests—Test Xb: Abrasion of markings and letterings caused by rubbing of fingers and hands*.

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

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## INTRODUCTION

This standard describes a method of test applicable to markings and lettering on such parts of electrical products (switches, plugs, handles, etc.) which in service are subjected to rubbing forces caused by the fingers or other parts of the hand. This standard may be applied to other industrial products.

This test should be required by the relevant specification when the stress during normal use is very high or in such cases where the legibility is important because of safety aspects or other reasons.

## STANDARDS AUSTRALIA

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**1 Scope**

This International Standard provides a standard method to determine the resistance of markings and letterings on flat or curved surfaces against abrasion as may occur for example by manually operating actuators and keyboards. The method is also suitable to test the resistance against fluid contamination as may occur under normal use.

**2 Normative reference**

The following normative document contains provisions which, through reference in this text, constitute provisions of this part of IEC 60068. At the time of publication, the edition indicated was valid. All normative documents are subject to revision, and parties to agreements based on this part of IEC 60068 are encouraged to investigate the possibility of applying the most recent editions of the normative document indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

IEC 60068-1: 1988, *Environmental testing – Part 1: General and guidance*  
Amendment 1 (1992)

**3 General description**

The surface under test shall be repeatedly stressed by the rubbing movement of a test piston. The tip of the test piston due to its elasticity is deformed in such a way as to fit the surface under test. The material, hardness and shape of the piston, the movement and the angle of action are chosen in such a way that the pressure and friction executed by a human finger or by the ball of a thumb are simulated.

To obtain reproducible conditions of friction a piece of fabric is placed between the piston and the surface under test (either as a cover of the piston or as a curtain, hanging between piston and surface). Depending on the relevant specification this fabric may either be dry (dry test) or soaked with a specified test liquid if the test is intended to cover the influence of fluid contamination as may occur in normal use (wet test).

**4 Description of the test apparatus****4.1 Test apparatus**

An example of a suitable test apparatus is shown in the schematic drawing in annex A.

The apparatus moves the rubbing-piston under an angle of  $45^\circ \pm 5^\circ$  via a connecting rod against the surface under test. The force  $F$  (given in the relevant specification) results in an elastic deformation of the test piston combined with a rubbing movement  $s$  across the surface under test. The rubbing movement shall be from 1 mm to 4 mm.

The pressing cycle shall be repeated as many times as prescribed by the relevant specification.