

Australian Standard™

**An appraisal of the problems of
accelerated testing for atmospheric
corrosion**

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 3 May 2004 and published on 27 May 2004.

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
Energy Supply Association of Australia
Testing Interests (Australia)

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PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL-026, Protective Enclosures and Environmental Testing for Electrical/Electronic Equipment, to supersede AS 1099.3.7—1981, *Basic environmental testing procedures for electro-technology - Background information - Section 7 - An appraisal of the problems of accelerated testing for atmospheric corrosion*.

The objective of this Standard is to provide background information on accelerated tests for atmospheric corrosion. It discusses various types of test, assesses their strengths and weaknesses and suggests what use can be made of them and what conclusions can be drawn.

Different applications of accelerated tests are covered including tests to predict performance under various conditions of use; tests to check the quality of materials and the influence of materials on each other and tests to check the functioning of equipment under corrosive conditions. Information is given on the standardizing of accelerated tests and the conclusions which can be drawn.

Detailed guidance relating to individual tests will be given with each relevant test published as a part of AS 60068, *Environmental testing*.

This Standard is identical with, and has been reproduced from, IEC 60355:1971, *An appraisal of the problems of accelerated testing for atmospheric corrosion*.

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'.
- (c) A full point should be substituted for a comma when referring to a decimal marker.
- (d) Any French text on figures should be ignored.

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

	<i>Page</i>
1 Introduction	1
2 Tests to predict the performance of a specimen under conditions of use	1
2.1 Conditions of use	1
2.2 Methods to accelerate the corrosion process	2
2.2.1 Temperature	2
2.2.2 Relative humidity.....	3
2.2.3 Condensation.....	3
2.2.4 Concentration of corrosive substances.....	3
2.2.5 Increase of duty cycle of corrosive conditions	4
2.3 Different behaviour of different materials to intensifying of corrosive factors	4
2.4 Surface conditions of the materials	4
3 Testing the quality and homogeneity of special materials	5
4 Testing the influence of different materials on each other.....	5
5 Testing the functioning of equipment and components	6
6 Standardizing of corrosion tests	6
7 Conclusions	7
8 Final remarks.....	7

NOTES

STANDARDS AUSTRALIA

Australian Standard**An appraisal of the problems of accelerated testing for atmospheric corrosion**

1 Introduction

This Report deals with general information on *accelerated* tests for atmospheric corrosion.

Subsequent clauses cover different applications of accelerated tests as follows:

- Clause 2: Tests to predict the performance of a specimen under conditions of use.
- Clause 3: Tests to check the quality and homogeneity of a special material.
- Clause 4: Tests to determine the influence of different materials on each other.
- Clause 5: Tests to check the functioning of equipment or components under corrosive conditions.
- Clause 6 gives some information on the standardizing of accelerated tests.
- Clause 7 is a generally worded section on conclusions to be drawn from the information available.

2 Tests to predict the performance of a specimen under conditions of use

An ideal general corrosion test could be defined as:

A test that gives in a short time, preferably within a few hours but at least within a few days or weeks, a rating of the behaviour of a material, a component or an equipment that can be correlated with its performance under conditions of use over several years.

Such a test is not possible for several reasons:

- conditions of use are not defined and vary over a very wide range;
- in order to accelerate corrosion phenomena, certain corrosive conditions have to be intensified with the danger that the mechanism of the attack and the appearance of the corrosion products may be changed;
- different materials react very differently to intensifying of corrosive factors.

2.1 Conditions of use

The most important factors affecting the corrosion under conditions of use are:

- a) climate, for example marine, rural, urban, industrial and tropical climates, or combinations thereof;
- b) irregular variations in each climate from place to place and also at the same place, not only with the seasons but from year to year, from day to day and even from hour to hour;
- c) exposure conditions, for example, indoors, outdoors and, if outdoors, under shelter or in the open;
- d) atmospheric pollution, for example, dust and soot particles and corrosive gases other than those specific to the particular climate;