

INTERNATIONAL STANDARD

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1984

Basic environmental testing procedures

Part 2:

Tests – Test N: Change of temperature

*This **English-language** version is derived from the original **bilingual** publication by leaving out all French-language pages. Missing page numbers correspond to the French-language pages.*



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Part 2: Tests – Test N: Change of temperature

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

BASIC ENVIRONMENTAL TESTING PROCEDURES**Part 2: Tests — Test N: Change of temperature**

FOREWORD

- 1) The formal decisions or agreements of the IEC on technical matters, prepared by Technical Committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendations and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

PREFACE

This standard has been prepared by Sub-Committee 50B: Climatic Tests, of IEC Technical Committee No. 50: Environmental Testing.

A first draft was discussed at the meeting held in The Hague 1982. As a result of this meeting, a draft, Document 50B(Central Office)242, was submitted to the National Committees for approval under the Six Months' Rule in September 1982.

This fifth edition supersedes the fourth edition (1974) of Test N: Change of Temperature.

The National Committees of the following countries voted explicitly in favour of publication:

Australia	Italy
Belgium	Japan
Bulgaria	Korea (Democratic People's Republic of)
Canada	Netherlands
China	New Zealand
Czechoslovakia	Norway
Egypt	Poland
Finland	South Africa (Republic of)
France	Spain
German Democratic Republic	Sweden
Germany	Switzerland
Hungary	Union of Soviet
Israel	Socialist Republics

Other IEC publications quoted in this standard:

Publications Nos.: 68-2-1: Basic Environmental Testing Procedures, Part 2: Tests — Tests A: Cold.

68-2-2: Tests B: Dry Heat.

68-2-33: Guidance on Change of Temperature Tests.

HISTORICAL SURVEY OF TEST N: CHANGE OF TEMPERATURE

- First edition, 1954** Contained one procedure only, Test Na: Rapid change of temperature, two-chamber method.
- Second edition, 1960** Equivalent to the previous Test Na, however, change-over time 2-3 min instead of maximum 5 min.
- Third edition, 1969** *Introduced:*
Test Na — Two-chamber method, equivalent to the previous Test Na, however a test duration of 30 min added as an alternative to 3 h while the temperatures are preferably the upper and lower category temperatures instead of mandatory restrictions to Tests A and B.

Test Nb — One-chamber method.
Test Nc — Two-water-bath method.
- Fourth edition, 1974** *Introduced:*
Test Na — Two-chamber method, equivalent to the previous Test Na, however, some chamber requirements have been added and the testing of heat dissipating specimens covered.
Test Nb — One-chamber method, equivalent to the previous Test Nb, however some chamber requirements have been added and the testing of heat dissipating specimens covered.
Test Nc — Two-water-bath method, no changes.
- Fifth edition, 1984** *Introduces:*
Test Na — Rapid change of temperature with prescribed time of transition, equivalent to the previous test Na, however the transition time is now prescribed more precisely, and a greater number of exposure times are given.
Test Nb — Change of temperature with specified rate of change, equivalent to the previous test Nb, however with a specified rate of change of temperature and a greater number of exposure times are given.

Test Nc — Rapid change of temperature, two fluid-bath method, equivalent to the previous test Nc, however the test is no longer restricted to the use of water and the duration parameters are more strictly described.
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BASIC ENVIRONMENTAL TESTING PROCEDURES

Part 2: Tests — Test N: Change of temperature

Introduction

A change of temperature test is intended to determine the effect on the specimen of a change of temperature or a succession of changes of temperature.

It is not intended to show effects which are due only to the high or low temperature. For these effects, the dry heat test or the cold test should be used.

The effect of such tests is determined by:

- values of high and low conditioning temperature between which the change is to be effected;
- the conditioning times for which the test specimen is kept at these temperatures;
- the rate of change between these temperatures;
- the number of cycles of conditioning;
- the amount of heat transfer into or from the specimen.

Guidance on the choice of suitable test parameters for inclusion in the detail specification is given in Publication 68-2-33: Basic Environmental Testing Procedures, Part 2: Tests — Guidance on Change of Temperature Tests, which should be read in conjunction with this standard.