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(Incorporating Amendment No. 1)

Australian Standard™

Environmental testing

Part 3.4: Supporting documentation and guidance—Damp heat tests

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 28 February 2003 and published on 8 May 2003.

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Australian Electrical and Electronic Manufacturer's 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. This Standard
A1 supersedes AS 1099.2.28:1994, *Basic environmental testing procedures for electrotechnology* Part 2.28: *Tests—Guidance for damp heat tests*.

This Standard incorporates Amendment No. 1 (*June 2004*). *The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.*

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 3.4 of that series.

This Standard is identical with, and has been reproduced from, IEC 60068-3-4:2001, *Environmental testing – Part 3-4: Supporting documentation and guidance—Damp heat tests*.

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– *test specifications: in italic type;*

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INTRODUCTION

Temperature and relative humidity (RH) of the air, in varying combinations, are climatic factors which act upon a product during storage, transportation and operation.

Meteorological measurements made over many years have shown that a relative humidity >95 % combined with a temperature >30 °C does not occur in free air conditions over long periods, except in regions with extreme climates. In dwelling rooms and workshops temperatures of >30 °C may occur but in most cases are combined with a lower relative humidity than in the open air.

Special conditions exist in certain wet rooms for example, in the chemical industry, metallurgical plants, mines, electroplating plants and laundries, where the temperature can reach 45 °C combined with a relative humidity up to saturation over long periods.

Certain equipment placed under particular conditions may be subjected to relative humidities of more than 95 % at higher temperatures. This may happen when the equipment is placed in enclosures, such as vehicles, tents or aircraft cockpits, since this can result in intense heating through solar radiation while, because of inadequate ventilation, any humidity that may be developed will be retained permanently within the interior.

In rooms having several heat sources, temperatures and relative humidities may vary in different parts of the room.

Atmospheric pollution can intensify the effects of a damp climate on products. Attention is drawn to this fact because of its general importance, although pollutants are not contained in the atmospheres used for damp heat testing. If the effects of pollutants, for example corrosion and mould growth, are to be investigated, a suitable test from the IEC 60068-2 series should be used.

STANDARDS AUSTRALIA

Australian Standard

Environmental testing
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1 Scope

This part of IEC 60068 provides the necessary information to assist in preparing relevant specifications, such as standards for components or equipment, in order to select appropriate tests and test severities for specific products and, in some cases, specific types of application.

The object of damp heat tests is to determine the ability of products to withstand the stresses occurring in a high relative humidity environment, with or without condensation, and with special regard to variations of electrical and mechanical characteristics. Damp heat tests may also be utilized to check the resistance of a specimen to some forms of corrosion attack.

2 Definitions

For the purpose of this part of IEC 60068, the following definitions apply.

2.1
condensation
precipitation of water vapour on a surface when the surface temperature is lower than the dewpoint temperature of the ambient air whereby water is transformed from vapour to the liquid state of aggregation

2.2
adsorption
adherence of water vapour molecules to a surface when the surface temperature is higher than the dewpoint temperature

2.3
absorption
accumulation of water molecules within a material

2.4
diffusion
transportation of water molecules through a material, produced by a partial pressure difference

NOTE Diffusion results in a balance of partial pressures, whilst flow (such as through leaks, when the dimensions of such leaks are great enough to provide viscous or laminar flow) always finally results in the balance of the total pressures.

2.5
breathing
exchange of air between a hollow space and its surroundings, produced by changes of temperature