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Reconfirmed 2015

Australian Standard[®]

**Additional requirements for
enclosed switchgear and
controlgear from 1 kV to 72.5 kV
to be use in severe climatic
conditions**

This Australian Standard was prepared by Committee EL/7, Power Switchgear. It was approved on behalf of the Council of Standards Australia on 8 August 1994 and published on 17 October 1994.

The following interests are represented on Committee EL/7:

Australian-British Chamber of Commerce
Australian Electrical and Electronic Manufacturers Association
Electricity Supply Association of Australia
Institution of Engineers, Australia
Railways of Australia Committee
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OF

AS 4243—1994

**Additional requirements for enclosed switchgear and controlgear from 1 kV to
72.5 kV to be used in severe climatic conditions**

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NOTES

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PREFACE

This Standard was prepared by the Standards Australia Committee EL/7 on Power Switchgear. It is identical with and has been reproduced from IEC 932:1988, *Additional requirements for enclosed switchgear and controlgear from 1 kV to 72.5 kV to be used in severe climatic conditions*.

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50(441)	Chapter 441: Switchgear controlgear and fuses	1852.441	Part 441: Switchgear, controlgear and fuses
298	A.C. metal-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 72.5 kV	2086	High-voltage a.c. switchgear and controlgear — Metal-enclosed — Rated voltages above 1 kV up to and including 72.5 kV
466	A.C. insulation-enclosed switchgear and controlgear for rated voltages above 1 kV and up to and including 38 kV	2264	High voltage a.c. switchgear and controlgear—Insulation-enclosed for rated voltages above 1 kV up to and including 36 kV
694	Common clauses for high-voltage switchgear and controlgear standards	2650	High voltage a.c. switchgear and controlgear—Common requirements

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NOTES

AUSTRALIAN STANDARD

ADDITIONAL REQUIREMENTS FOR ENCLOSED SWITCHGEAR AND CONTROLGEAR FROM 1 kV TO 72.5 kV TO BE USED IN SEVERE CLIMATIC CONDITIONS

INTRODUCTION

This report has been compiled to indicate the form which a future standard might take and to promote research on this subject.

To this end, two established ageing test procedures are presented and possible evaluation criteria are also proposed with the intention of guiding this future research so that results can be properly compared and the evaluation criteria more exactly related to actual service experience.

The proposed penetration test is based on the principle that ageing effects may be essentially reduced by making use of the protection given by the external enclosure of the switchgear and controlgear. Potentially, a means of predicting internal equipment life duration with a short-time test is offered but only limited experience of performing the test and relating results to performance in service is currently available. Further research in this field is also therefore desirable.

1. Scope

This report applies to indoor enclosed switchgear and controlgear complying with IEC Publications 298 and 466, excluding gas-insulated metal-enclosed switchgear, intended to be used in service conditions more severe with respect to condensation and pollution than the normal service conditions specified in those standards.

Note.- Whilst the performance of mechanical components, such as mechanisms, interlocks and enclosures, is also of importance, the tests detailed in this report have been designed primarily to investigate the behaviour of electrical insulation.

2. Object

This report proposes definitions for two degrees of severe service conditions with respect to condensation and pollution. It also proposes test procedures for assessing the performance of enclosed switchgear and controlgear under specified conditions so that conclusions may be drawn concerning their suitability for service under those severe service conditions.

In this report, the term "equipment" is used in accordance with the scope for an "enclosed assembly of switchgear and controlgear" (IEV 441-12-02).

3. Degrees of severity of service conditions under condensation and pollution

Indoor equipment installed inside a building or room and thus normally protected against the outdoor climatic conditions may be submitted to condensation due to rapid temperature changes and to pollution due to the environment inside the building.

The service conditions with respect to condensation and pollution around the enclosed switchgear and controlgear are designated and characterized as follows:

C_o : Condensation does not normally occur (not more than twice a year)

C_L : Non-frequent condensation (not more than twice a month)

C_H : Frequent condensation (more than twice a month)

P_o : No pollution

P_L : Light pollution (as given in Sub-clause 2.1.1, Item c) of IEC Publication 694)

P_H : Heavy pollution

Notes 1.- P_o is considered as unrealistic.

2.- For service conditions which include the presence of corrosive deposits, the manufacturer should be consulted.

Taking into account the fact that the equipment is especially influenced by the combination of humidity and pollution, three degrees of severity of service conditions are defined as follows:

Degree 0: C_oP_L

Degree 1: C_LP_L or C_oP_H

Degree 2: C_LP_H or C_HP_L or C_HP_H

4. Classification of enclosed switchgear and controlgear

Three design classes 0, 1, 2 are defined. They essentially correspond to the three degrees of severity of service conditions according to Clause 3. Typical examples of use of equipment according to its design class are the following:

a) Design Class 0:

Equipment to be used in temperature-controlled locations. Heating or cooling may be switched off for certain periods. The building or room provides protection from daily variations of outside climate. Precautions have been taken to minimize the presence of deposits.