AS 1018—1985

Australian Standard®

Partial discharge measurements

This Australian standard was prepared by Committee EL/7, Power Switchgear. It was approved on behalf of the Council of the Standards Association of Australia on 20 November 1984 and published on 4 April 1985.

The following interests are represented on Committee EL/7

Australian British Chamber of Commerce

Australian Electrical and Electronic Manufacturers Association

Confederation of Australian Industry

Electricity Supply Association of Australia

Institution of Engineers, Australia

Railways of Australian Committee

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PREFACE

This edition of this standard was prepared by the Association's Committee on Power Switchgear to supersede AS 1018—1970, Recommendations for Partial Discharge Measurements.

This standard is identical with and has been reproduced from IEC 270(1981), Partial Discharge Measurements. Thus it does not have the same format as AS 1018—1970.

This standard applies to the methods of measurement of partial discharges in the insulating media of electrical equipment during tests principally with alternating voltage, however, it also covers special requirements for partial discharge test measurements during tests with direct voltage.

This standard is intended principally as a guide to the drafting of specifications for specific equipment.

For the purpose of this standard, the text of the IEC Publication should be modified as follows:

(a) *Clauses 4.3.6 and 6.4.1.* Both Clauses 4.3.6 and 6.4.1 have been slightly amended and for the convenience of users the amendments have been inserted directly into the text of the standard and this is indicated by a rule in the margin.

(b) *Technical Committee.* Where reference is made to 'the relevant Technical Committee' this should also be taken as a reference to the relevant equipment standard.

(c) *Decimal comma.* The decimal point should replace the decimal comma wherever it appears.

(d) *Cross-reference.* The reference to IEC Publications should be replaced by reference to Australian Standards, as follows:

Reference to IEC Publication		*Appropriate Australian Standard*	
IEC 60:	High voltage test techniques	AS 1931	High Voltage Testing Techniques
IRC 60-2, Part 2:	Test Procedures	Part 1—	General Definitions, Test procedures and Measuring Devices

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PARTIAL DISCHARGE MEASUREMENTS

1. Scope

This standard applies to the measurement of partial discharges during tests with alternating voltage, but general terms, definitions and requirements are usually also applicable for measurement of partial discharges during tests with direct voltage. Some special characteristics of partial discharge measurements under direct voltage are given in a separate clause and necessary references are made throughout the text. This standard is intended principally as a general guide to the drafting of specifications for specific apparatus.

Measurements of partial discharges are made for the following main purposes:

— to verify that the test object does not exhibit partial discharges greater than a specified magnitude, at a specified voltage;

— to determine the voltage amplitude at which partial discharges of a specified low magnitude commence with increasing voltage and cease with decreasing voltage;

— to determine the magnitude of the specified discharge quantity at a specified voltage.

The partial discharges which are considered in this standard are localized electrical discharges in insulating media, restricted to only a part of the dielectric under test and only partially bridging the insulation between conductors. Discharges mostly occur in the form of individual pulses, which can be detected as electrical pulses in the external circuit connected to the test object. However, a more continuous form may also occur, the so-called pulseless discharge. This form will normally not be detected by the measurement methods described in this standard.

Partial discharges may occur in cavities in solid insulation, in gas bubbles in liquid insulation or between layers of insulation with different dielectric characteristics. They may also occur at sharp edges or points of metallic surfaces.

Even though they involve only small amounts of energy, partial discharges may lead to progressive deterioration of the dielectric properties of insulating materials; the definition and evaluation of such deterioration, however, is beyond the scope of this standard.

Partial discharge measurements on cables and on apparatus having windings, such as transformers, generators and motors, are complicated by attenuation, resonance and travelling wave phenomena. Special requirements for tests on these objects are only briefly dealt with.

This standard deals mainly with electrical measurements of partial discharges, but some reference is also made to non-electrical methods.