Australian Standard®

Insulators

Part 3: Porcelain and glass indoor and outdoor station post insulators (for voltages greater than 1000 V a.c.)

The following scientific, industrial and governmental organizations and departments were officially represented on the committee entrusted with the preparation of this standard:

Australian Electrical and Electronic Manufacturers Association
Australian Porcelain Insulators and Technical Ceramic Manufacturers Association
Confederation of Australian Industry
Electrical and Radio Federation of Victoria
Energy Authority of New South Wales
Electricity Supply Association of Australia
Railways of Australia Committee

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PREFACE

This edition of this standard was prepared by the Association's Committee on Overhead Line Materials, to supersede AS 1137, Part 3—1972. It is Part 3 of a standard for insulators.

Other Parts of the standard are:

Part 1— Porcelain and Glass Insulators for Overhead Power Lines (for voltages greater than 1000 V a.c.)

Part 2— Porcelain and Glass Line Insulators, including Shackle Insulators (for voltages up to and including 1000 volts a.c.)

Part 4— Porcelain Stay Insulators

This standard applies to post insulators and post insulator units in which the insulating material is of porcelain, toughened glass or annealed glass, for use indoors or outdoors.

In preparing this standard, close attention was given to the following:

BS 3297 High Voltage Post Insulators

IEC 168 Tests on Indoor and Outdoor Post Insulators for Systems with Nominal Voltages greater than 1000 V.

Acknowledgement is made of the valuable assistance received from these documents.

This edition varies from the 1972 edition by the updating of cross references to other standards and editorial corrections.

Following the publication of this edition, a full revision of this standard will commence with the object of alignment with IEC standards.

This standard requires reference to the following standards:

AS 1111 ISO Metric Hexagon Commercial Bolts and Screws

AS 1112 ISO Metric Hexagon Nuts, Including Thin Nuts, Slotted Nuts and Castle Nuts

AS 1650 Galvanized Coatings

AS 1824 Insulation Coordination
Part 1—Basic Principles, Standard Insulation Levels and Test Procedures

AS 1852 International Electrotechnical Vocabulary

AS 1931 High Voltage Testing Techniques
Part 1—General Definitions, Test Requirements, Test Procedures and Measuring Devices

AS B193 Hot-dip Galvanized Coating on Fasteners

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
INSULATORS

Part 3—PORCELAIN AND GLASS INDOOR AND OUTDOOR STATION POST INSULATORS (for voltages greater than 1000 V a.c.)

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This standard specifies requirements for post insulators and post insulator units, in which the insulating material is of porcelain, toughened glass or annealed glass, for use indoors and outdoors, at nominal voltages greater than 1000 V and a frequency not greater than 100 Hz.

It applies to insulators designed to provide rigid support for busbars, parts of isolators, parts of airbreak switches and other conductors in stations, and for similar applications.

It does not apply to insulators for supporting overhead transmission line conductors, nor does it apply to bushing insulators.

NOTE: Appendix B lists information which should be specified by the purchaser of the insulators.

1.2 VALUES OF VOLTAGES.

1.2.1 System Nominal Voltage. The system nominal voltage shall be the r.m.s. phase-to-phase voltage by which the system is designated.

1.2.2 System Highest Voltage. The system highest voltage shall be the highest r.m.s. phase-to-phase voltage which can be sustained under normal operating conditions at any time and at any point on the system. It excludes temporary voltage variations due to fault conditions and the sudden disconnection of large loads.

1.2.3 Test Voltages. The test voltages referred to in this specification are to be construed as those defined in AS 1931.

1.3 DEFINITIONS. For the purpose of this standard the definitions in AS 1852 and the following definitions apply.

1.3.1 System with effectively earthed neutral—a system which is earthed in such a manner that during a phase-to-earth fault the maximum r.m.s. voltage to earth of the sound phases does not exceed 80 percent of the phase-to-phase voltage.

1.3.2 System with non-effectively earthed neutral—a system which is earthed at a limited number of points such that during a phase-to-earth fault the maximum r.m.s. voltage to earth of the sound phases may exceed 80 percent of the phase-to-phase voltage.

1.3.3 Post insulator—consists of one post insulator unit or an assembly of such units and is intended to give rigid support to a live part which is to be insulated from earth or from another live part.

1.3.4 Post insulator unit—a constituent part of a post insulator and consists of a permanent assembly of one or more insulating parts complete with other parts (metallic or non-metallic) designed to facilitate attachment to it.

1.3.5 Outdoor post insulators or post insulator units—those intended to be subjected in service to the weather (sun, rain, snow, etc).

1.3.6 Indoor post insulators or post insulator units—those intended to be installed indoors where they are not subject to excessive condensation.

NOTE: For indoor installations subject to excessive condensation, outdoor insulators or special indoor insulators may be used.

1.3.7 Batch—a number of insulators from the same manufacturer and of the same design offered for acceptance. A batch may consist of the whole, or part, of the quantity ordered.

1.3.8 Flashover—the result of a disruptive discharge (as defined in AS 1931) external to the insulator.

1.3.9 Puncture—the result of a disruptive discharge (as defined in AS 1931) passing through the solid insulating parts of an insulator.

NOTE: A fragment breaking away from the rim of a shed or damage to the insulator due to the heat of a surface discharge is not considered a puncture.

1.3.10 Puncture voltage—the voltage which, under the conditions prescribed in Clause 6.5, causes puncture.

1.3.11 Dry impulse withstand voltage—the specified impulse voltage which the insulator shall withstand, under the conditions prescribed in Clause 5.2.2, without flashover or puncture.

1.3.12 50 percent impulse flashover voltage—the impulse voltage which, under the conditions prescribed in Clause 5.2.3 has a 50 percent probability of producing a flashover on the insulator.

1.3.13 Dry or wet power-frequency withstand voltage—the specified power-frequency voltage which the insulator shall withstand dry or wet, under the conditions prescribed in Clause 5.3 or 5.4, for the specified time without flashover or puncture.

1.3.14 Dry or wet power-frequency flashover voltage—the arithmetic mean value of the measured voltages which cause flashover of the insulator under the conditions prescribed in Clauses 5.3 or 5.4.