

Australian/New Zealand Standard™

**Electrical apparatus for use in the  
presence of combustible dust**

**Part 2.1: Test methods—Methods for  
determining the minimum ignition  
temperatures of dust**

## **AS/NZS 61241.2.1:2000**

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This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee EL/14, Electrical Equipment in Hazardous Areas. It was approved on behalf of the Council of Standards Australia on 3 December 1999 and on behalf of the Council of Standards New Zealand on 22 November 1999. It was published on 3 February 2000.

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# Australian/New Zealand Standard™

## **Electrical apparatus for use in the presence of combustible dust**

### **Part 2.1: Test methods—Methods for determining the minimum ignition temperatures of dust**

First published as AS/NZS 61241.2.1:2000.

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## PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee EL/14, Electrical Equipment in Hazardous Areas.

This Standard is identical with and has been reproduced from, IEC 61241-2-1:1994, *Electrical apparatus for use in the presence of combustible dust*, Part 2: *Test methods*, Section 1: *Methods for determining the minimum ignition temperatures of dust*.

The objective of this Standard is to provide testing authorities and certifying bodies with test methods to determine the minimum ignition temperatures of dust layers and clouds, so as to allow the proper selection of adequate electrical apparatus to be used in areas where combustible dusts are or may be present.

In January 1997, the IEC commenced numbering its Standards from 60000 by adding 60000 to the number of each existing Standard. This coordinates IEC numbering with ISO numbering. During the transition period an IEC Standard might be identified by its new number or its old number (for example, IEC 60050 or IEC 50).

This Standard is part of a series covering electrical apparatus for use in the presence of combustible dust which comprises the following:

## AS/NZS

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|-----------|---|
| 61241     | Electrical apparatus for use in the presence of combustible dust  |
| 61241.1.1 | Part 1.1: Electrical apparatus protected by enclosures and surface temperature limitation—Specification for apparatus             |
| 61241.1.2 | Part 1.2: Electrical apparatus protected by enclosures and surface temperature limitation—Selection, installation and maintenance |
| 61241.2.1 | Part 2.1: Test methods—Methods for determining the minimum ignition temperatures of dust (this Standard)                          |
| 61241.2.2 | Part 2.2: Test methods—Method for determining the electrical resistivity of dust in layers  |
| 61241.2.3 | Part 2.3: Test methods—Method for determining minimum ignition energy of dust/air mixtures  |
| 61241.3   | Part 3: Classification of areas where combustible dusts are or may be present.  |

As this Standard is reproduced from an International Standard a full point should be substituted for a comma when referring to a decimal marker.

The term 'normative' has been used in this Standard to define the application of the annex to which it applies. A 'normative' annex is an integral part of a Standard.

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## INTRODUCTION

This part of AS/NZS 61241 describes methods for determining the minimum ignition temperature of dust which are:

- method A: Dust layer on a heated surface at a constant temperature (clause 4);
- method B: Dust cloud in a furnace at a constant temperature (clause 5).

Method A determines the minimum ignition temperature of a dust layer on a prescribed heated surface.

Method B determines the minimum ignition temperature of a dust cloud within a prescribed heated furnace.

The test methods are of a general nature, and may be used for purposes of comparison, but in certain industrial situations further tests may be necessary.

The methods for determining the minimum ignition temperatures are not suitable for use with recognized explosives, for example, gunpowder, dynamite, or mixtures of substances which may, under some circumstances, behave similarly.

Where there is doubt, an indication of the existence of a hazard due to explosive properties may be obtained by testing a very small quantity of the dust on a surface at 400°C or higher, located remotely from the operator.

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**1 Scope**

This part of AS/NZS 61241 specifies two test methods for determining the minimum ignition temperatures of dust.

The methods are not suitable for use with substances having explosive properties.

Method A (clause 4) is applicable to the determination of the minimum temperature of a prescribed hot surface which will result in the decomposition and/or ignition of a layer of dust of a specified thickness deposited on it. The method is particularly relevant to industrial equipment with which dust is present on hot surfaces in thin layers exposed to the atmosphere.

Method B (clause 5) is applicable to the determination of the minimum temperature of a prescribed hot surface which will result in the ignition of a cloud of a given sample of dust or other particulate solid. The test is intended to be carried out as a complementary test after determining the minimum ignition temperature of a dust layer by method A of this standard.

NOTES concerning method B

- 1 Because the method of operation of the furnace gives short residence times for dust particles within it, this method of test is applicable to industrial equipment where dust is present as a cloud for a short time. This method of test is of small scale and the results are not necessarily representative of all industrial conditions.
- 2 The method is not applicable to dusts which may, over a longer period of time than provided for in the test method, produce from deposits gases generated during pyrolysis or smouldering.

**2 Normative references**

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of AS/NZS 61241. At the time of publication, the editions indicated were valid. All normative documents are subject to revision, and parties to agreements based on this part of AS/NZS 61241 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 565: 1990, Test sieves - Metal wire cloth, perforated metal plate and electroformed sheet - Nominal sizes of opening

ISO 4225: 1980: Air quality - General aspects - Vocabulary