
Electrical apparatus for use in the presence of combustible dust - Part 2: Test methods - Section 2: Method for determining the electrical resistivity of dust in layers

Electrical apparatus for use in the presence of combustible dust - Part 2: Test methods - Section 2: Method for determining the electrical resistivity of dust in layers

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Matériels électriques destinés à être utilisés en présence de poussières combustibles - Partie 2: Méthodes d'essais - Section 2: Méthode de détermination de la résistivité électrique des couches de poussières

<https://standards.iteh.ai/catalog/standards/sist/cd18f15d-ec36-4102-89e0-60d2c9f16c7f/sist-iec-tr-61241-2-2-1998>

Ta slovenski standard je istoveten z: IEC/TS 61241-2-2

ICS:

29.260.20 Ò\^ dã } ãæ aæã æ Electrical apparatus for
 ^\•] || : ã } æ : !æ læ explosive atmospheres

SIST IEC/TR 61241-2-2:1998

en

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST IEC/TR 61241-2-2:1998](https://standards.iteh.ai/catalog/standards/sist/cd18f15d-ee36-4102-89e0-60d2c9f16c7f/sist-iec-tr-61241-2-2-1998)

<https://standards.iteh.ai/catalog/standards/sist/cd18f15d-ee36-4102-89e0-60d2c9f16c7f/sist-iec-tr-61241-2-2-1998>

RAPPORT
TECHNIQUE – TYPE 2
TECHNICAL
REPORT – TYPE 2

CEI
IEC
1241-2-2

Première édition
First edition
1993-08

**Matériels électriques destinés à être utilisés
en présence de poussières combustibles –**

iTeh STANDARD PREVIEW

Partie 2:

Méthodes d'essais –

Section 2: Méthode de détermination de

la résistivité électrique des couches de poussières

<https://standards.iteh.ai/catalog/standards/sist/61241-2-2-1998/60d2c9f16c7f/sist-iec-tr-61241-2-2-1998>

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

Part 2:

Test methods –

Section 2: Method for determining the electrical

resistivity of dust in layers

© CEI 1993 Droits de reproduction réservés — Copyright – all rights reserved

Aucune partie de cette publication ne peut être reproduite ni utilisée sous quelque forme que ce soit et par aucun procédé, électronique ou mécanique, y compris la photocopie et les microfilms, sans l'accord écrit de l'éditeur.

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Bureau Central de la Commission Electrotechnique Internationale 3, rue de Varembe Genève, Suisse



Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

CODE PRIX
PRICE CODE

J

Pour prix, voir catalogue en vigueur
For price, see current catalogue

Publication 1241-2-2 de la CEI
(Première édition - 1993)

Matériels électriques destinés
à être utilisés en présence
de poussières combustibles

Partie 2: Méthodes d'essais
Section 2: Méthode de détermination
de la résistivité électrique
des couches de poussières

IEC Publication 1241-2-2
(First edition - 1993)

Electrical apparatus
for use in the presence
of combustible dust

Part 2: Test methods
Section 2: Method for determining
the electrical resistivity
of dust in layers

C O R R I G E N D U M 1

Page 14

6.3 Calcul de la résistivité

Sous la seconde équation de l'article, au lieu de:

où
 ρ est la résistivité en Ω ;

lire:

où
 ρ est la résistivité en $\Omega \cdot m$;

Page 15

6.3 Calculation of resistivity

Under the second equation in the clause, instead of:

where
 ρ is the resistivity in Ω ;

read:

<https://standards.iteh.ai/catalog/standards/sist/6115d-ee36-4102-89e0-60d2c9f16c7f/sist-iec-tr-61241-2-2-1998>
where
 ρ is the resistivity in $\Omega \cdot m$;

iTeh STANDARD PREVIEW
(standards.iteh.ai)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[SIST IEC/TR 61241-2-2:1998](https://standards.iteh.ai/catalog/standards/sist/cd18f15d-ee36-4102-89e0-60d2c9f16c7f/sist-iec-tr-61241-2-2-1998)

<https://standards.iteh.ai/catalog/standards/sist/cd18f15d-ee36-4102-89e0-60d2c9f16c7f/sist-iec-tr-61241-2-2-1998>

INTERNATIONAL ELECTROTECHNICAL COMMISSION

—————

**ELECTRICAL APPARATUS FOR USE IN THE
PRESENCE OF COMBUSTIBLE DUST –**

Part 2: Test methods –

**Section 2: Method for determining the electrical resistivity
of dust in layers**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international cooperation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of the IEC on technical matters, prepared by technical committees on which all the National Committees having a special interest therein are represented, express, as nearly as possible, an international consensus of opinion on the subjects dealt with.
- 3) They have the form of recommendations for international use published in the form of standards, technical reports or guides and they are accepted by the National Committees in that sense.
- 4) In order to promote international unification, IEC National Committees undertake to apply IEC International Standards transparently to the maximum extent possible in their national and regional standards. Any divergence between the IEC Standard and the corresponding national or regional standard shall be clearly indicated in the latter.

The main task of IEC technical committees is to prepare International Standards. In exceptional circumstances, a technical committee may propose the publication of a technical report of one of the following types:

- type 1, when the required support cannot be obtained for the publication of an International Standard, despite repeated efforts;
- type 2, when the subject is still under technical development or where for any other reason there is the future but not immediate possibility of an agreement on an International Standard;
- type 3, when a technical committee has collected data of a different kind from that which is normally published as an International Standard, for example "state of the art".

Technical reports of types 1 and 2 are subject to review within three years of publication to decide whether they can be transformed into International Standards. Technical reports of type 3 do not necessarily have to be reviewed until the data they provide are considered to be no longer valid or useful.

IEC 1241-2-2 which is a technical report of type 2, has been prepared by sub-committee 31H: Apparatus for use in the presence of combustible dust, of IEC technical committee 31: Electrical apparatus for explosive atmospheres.

INTRODUCTION

This technical report is applicable to the determination of the electrical resistivity of dust in layers.

The test method is not suitable for use with recognized explosives, gunpowder, dynamite, or substances or mixtures of substances which may, under some circumstances, behave in a similar manner. Where any doubt exists about the existence of a hazard due to explosive properties, an indication may be obtained by placing a very small quantity of the dust in question on the heated surface of the apparatus prescribed in IEC 1241-2-1*, heated to 400 °C.

The test for explosivity will not always reveal the explosive nature of a dust so that a "fail to danger*" situation could arise.

NOTE - Precautions should be taken to safeguard the health of personnel conducting the tests against the risk of fire, explosion and/or the effects, including toxic effects, of combustion.

This test method is applicable to the construction and application of electrical apparatus for use in the presence of combustible dust.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[SIST IEC/TR 61241-2-2:1998](https://standards.iteh.ai/catalog/standards/sist/cd18f15d-ee36-4102-89e0-60d2c9f16c7f/sist-iec-tr-61241-2-2-1998)

<https://standards.iteh.ai/catalog/standards/sist/cd18f15d-ee36-4102-89e0-60d2c9f16c7f/sist-iec-tr-61241-2-2-1998>

* IEC 1241-2-1: 1993, *Electrical apparatus for use in the presence of combustible dust – Part 2: Test methods – Section 1* (under consideration).

4 Test apparatus

Figures 1 and 2 give details for the construction of the test apparatus. The test cell (see figure 1) is of open construction, and consists of two stainless steel bars with nominal dimensions: length (W) – 100 mm, height (H) – 10 mm, breadth (B) – 20 mm to 40 mm. These bars are placed at a nominal distance apart of (L) – 10 mm on a base with a thickness between 5 mm and 10 mm.

NOTE - Glass or polytetrafluorethylene (PTFE) have been found to be suitable materials for the base.

Two glass bars, also with a nominal height of 10 mm, are placed across the ends of the electrodes to keep the dust layer in place.

Figure 2 illustrates an example of a suitable electrical circuit for making the resistivity measurement. It contains a 10 k Ω resistor to restrict the breakdown current to a maximum value of 0,2 A at a maximum supply voltage of 2 000 V d.c. Other circuits with comparable characteristics and accuracy may be used.

The current-to-voltage converter has six ranges to deal with the various values of supply voltage and dust resistivity. A voltage inverter is present to provide a positive output. All resistors are 5 %, 0,5 W high-stability carbon-film type.

iTeh STANDARD PREVIEW

(standards.iteh.ai)

5 Test sample

The test sample shall be homogeneous and representative of the dust received for testing. When dust is received, it should be put in a closed vessel until tested, or it should be conditioned, or it should be tested directly, and the moisture content measured at the same time and reported.

The sample of dust to be tested shall, in general, be able to pass through a woven metal wire cloth, or a square hole perforated plate test sieve with a nominal size a perture of 71 μm (supplementary size, see ISO 565). If it is required to test coarser dust, a test sieve with a nominal size of aperture up to 500 μm may be used. State the nominal size of aperture of the sieve used in the report of the test.

State the moisture content of the dust sample as tested in the report of the test, and describe the method of measurement.

State in the test report any apparent changes in the properties of the dust, for example moisture content or particle shape, resulting from the preparation of the test sample, for example in sieving.

6 Procedure

6.1 Preliminary measurement

Measure the resistance R_0 of the empty test cell with the two glass bars in position.

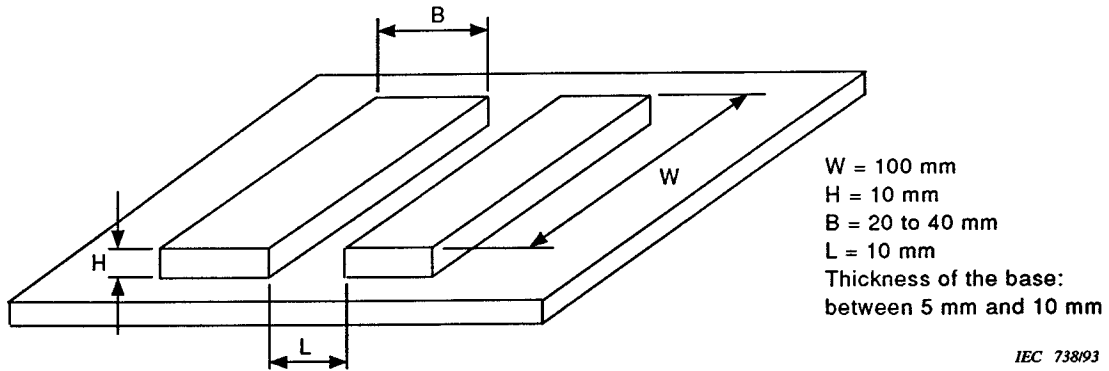


Figure 1 - Test cell

iTeh STANDARD PREVIEW
 (standards.iteh.ai)

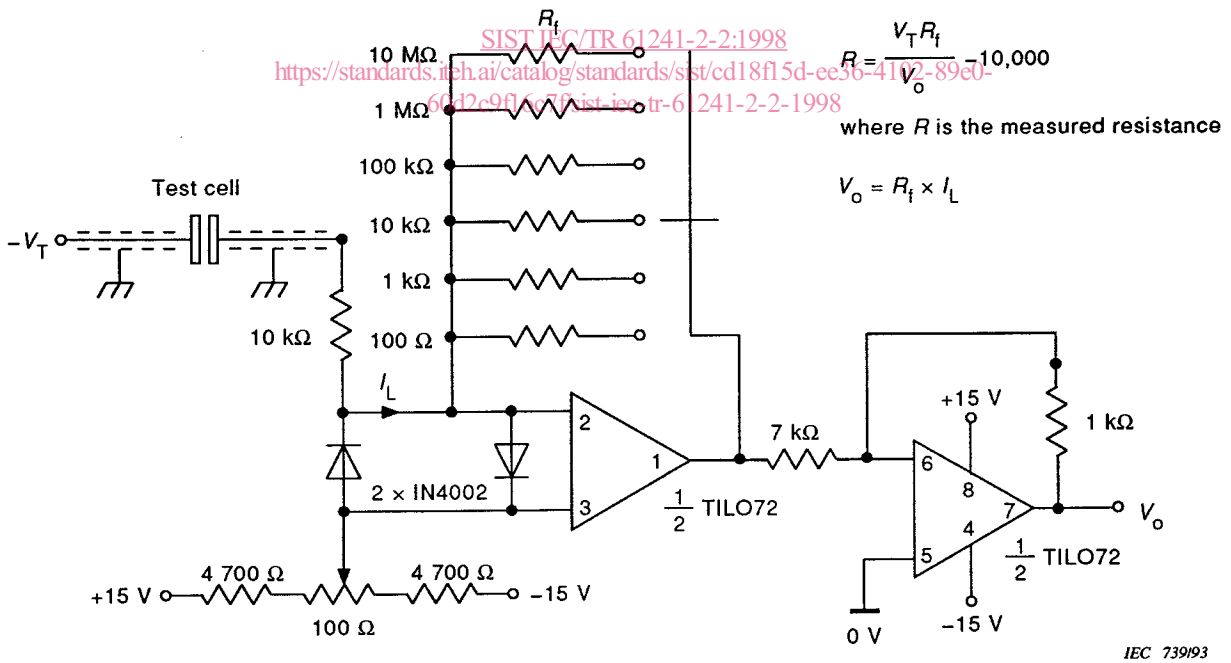


Figure 2 - Circuit diagram