

SLOVENSKI STANDARD

SIST HD 602 S1:1998

01-februar-1998

Test on gases evolved during combustion of electric cables - Part 2: Determination of degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring pH and conductivity (IEC 754-2:1991, modified)

Test on gases evolved during combustion of materials from cables - Determination of degree of acidity (corrosivity) of gases by measuring pH and conductivity

Prüfung der bei der Verbrennung von Kabel- und Leitungswerkstoffen entstehenden Gase - Bestimmung des Grades der Azidität (Korrosivität) von Brandgasen durch die Messung von pH und Leitfähigkeit

Essai sur les gaz émis lors de la combustion des matériaux prélevés sur câbles - Détermination de l'acidité (corrosivité) des gaz par mesurage du pH et de la conductivité

Ta slovenski standard je istoveten z: HD 602 S1:1992

ICS:

29.060.20 Kabli Cables

SIST HD 602 S1:1998 **en**

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST HD 602 S1:1998

<https://standards.iteh.ai/catalog/standards/sist/210d4419-0530-4412-9370-bdb0c3457103/sist-hd-602-s1-1998>

UDC 621.315.3:620.1

Descriptors: Fire hazard testing, test methods, synthetic materials,
corrosiveness of smoke, determination pH value

ENGLISH VERSION

Test on gases evolved during the combustion of
materials from cables
Determination of degree of acidity
(corrosivity) of gases by measuring pH and conductivity
(IEC 754-2:1991, modified)

Essai sur les gaz émis lors de
la combustion des matériaux
prélevés sur câbles
Détermination de
l'acidité (corrosivité) des gaz
par mesurage du pH et de la
conductivité
(CEI 754-2:1991, modifiée)

Prüfung der bei der
Verbrennung von Kabel- und
Leitungswerkstoffen entstehenden
Gase
Bestimmung des Grades
der Azidität (Korrosivität)
von Brandgasen durch die Messung
von pH und Leitfähigkeit
(IEC 754-2:1991, modifiziert)

IT&T STANDARD PREVIEW
(standards.iteh.ai)

SIST HD 602 S1:1998

This Harmonization Document was approved by CENELEC on 1992-03-24.
CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations
which stipulate the conditions for implementation of this Harmonization Document
on a national level.

Up-to-date lists and bibliographical references concerning national implementation
may be obtained on application to the Central Secretariat or to any CENELEC member.

This Harmonization Document exists in three official versions (English, French,
German).

CENELEC members are the national electrotechnical committees of Austria, Belgium,
Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg,
Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CENELEC

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

Central Secretariat: rue de Stassart 35, B-1050 Brussels

©1992 Copyright reserved to CENELEC members

Ref. No. HD 602 S1:1992 E



SIST..... HD 602 S1

FOREWORD

Following a decision taken by CENELEC Technical Committee TC 20, the International Publication IEC 754-2, together with a common modification, was submitted to the CENELEC Unique Acceptance Procedure (UAP) in July 1991 for acceptance as a Harmonization Document.

The text of the draft was approved by CENELEC as HD 602 S1 on 24 March 1992.

The following dates were fixed:

- latest date of announcement
of the HD at national level (doa) 1992-09-01
- latest date of publication of
a harmonized national standard (dop) 1993-01-01
- latest date of withdrawal of
conflicting national standards (dow) 1993-01-01

For products which have complied with the relevant national standard before 1993-01-01, as shown by the manufacturer or by a certification body, this previous standard may continue to apply for production until 1994-01-01.

ITeH STANDARD PREVIEW
(standards.iteh.ai)
ENDORSEMENT NOTICE

The text of the International Publication IEC 754-2:1991 was approved by CENELEC as a Harmonization Document with agreed common modifications as given below.

COMMON MODIFICATIONS

- | | |
|--------------|--|
| Title | Replace by:

Test on gases evolved during the combustion of materials from cables - Determination of degree of acidity (corrosivity) of gases by measuring pH and conductivity |
| Introduction | Replace the second paragraph by:

Although there is not a direct quantitative correlation between pH and corrosivity, the determination of the pH and conductivity of evolved gases usually gives a qualitative indication of the possible corrosivity of the gases evolved during the fire. |
| Scope | Add "(corrosivity)" after "acidity" in line one. |

NORME
INTERNATIONALE
INTERNATIONAL
STANDARD

CEI
IEC
754-2

Première édition
First edition
1991-07

**Essai sur les gaz émis lors de la combustion
des câbles électriques**

Partie 2:

Détermination de l'acidité des gaz émis
lors de la combustion d'un matériau prélevé
sur un câble par mesurage du pH
et de la conductivité

<https://standards.iteh.ai/catalog/standards/sist/210d4419-0530-4412-9370-bdb0c3457103/sist-hd-602-s1-1998>

**Test on gases evolved during combustion
of electric cables**

Part 2:

Determination of degree of acidity
of gases evolved during the combustion
of materials taken from electric cables
by measuring pH and conductivity

© CEI 1991 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

N

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

CONTENTS

	Page
FOREWORD	5
INTRODUCTION.....	7
Clause	
1 Scope	9
2 Principle of the method	9
3 Test apparatus	9
3.1 Tube furnace	9
3.2 Tube	9
3.3 Combustion boats	11
3.4 Bubbling devices for gases	11
3.5 Air supply system	11
3.6 Measuring instruments	13
4 Conditioning of the samples	13
5 Test pieces	13
6 Procedure	13
7 Determination of the pH value and conductivity	15
7.1 Calibration of the pH meter	15
7.2 Determination of the pH value and conductivity of the solution	15
8 Expression of the results	15
8.1 Mean value	15
8.2 Weighted values	15
9 Recommended values	17
Figures	19

INTERNATIONAL ELECTROTECHNICAL COMMISSION

TEST ON GASES EVOLVED DURING COMBUSTION OF
ELECTRIC CABLESPart 2: Determination of degree of acidity of gases evolved
during the combustion of materials taken from electric
cables by measuring pH and conductivity

FOREWORD

- 1) 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.
- 2) They have the form of recommendations for international use and they are accepted by the National Committees in that sense.
- 3) In order to promote international unification, the IEC expresses the wish that all National Committees should adopt the text of the IEC recommendation for their national rules in so far as national conditions will permit. Any divergence between the IEC recommendation and the corresponding national rules should, as far as possible, be clearly indicated in the latter.

SIST HD 602 S1:1998

This part of International Standard IEC 754 has been prepared by Sub-Committee 20C: Burning characteristics of electric cables, of IEC Technical Committee No. 20: Electric cables.

The text of this part is based on the following documents:

Six Months' Rule	Report on Voting
20C(CO)2	20C(CO)6

Full information on the voting for the approval of this part can be found in the Voting Report indicated in the above table.

INTRODUCTION

Cable users have expressed concern over the amount of acid gas which is evolved when cable insulating, sheathing and other materials are burned, as this acid can cause extensive damage to electrical and electronic equipment not involved in the fire itself. It has been considered necessary therefore to develop an approved method (by extensive round robins) for determining the amount of acid gases evolved by burning cable components so that limits can be agreed for cable specifications. As the test is not carried out on a complete cable test piece, for a hazard assessment the actual material volumes of the cable components should be taken into consideration.

The proposed limits of pH and conductivity can only be regarded as an indication, as the relationship between corrosion and these two parameters does not necessarily embrace all materials.

This part of IEC 754 is linked with IEC 754-1, but it will be noted that the test procedure differs considerably. An examination of IEC 754-1, with a view to the possible adoption of some of the features of this part, has been initiated.

iTeh STANDARD PREVIEW (standards.iteh.ai)

SIST HD 602 S1:1998

<https://standards.iteh.ai/catalog/standards/sist/210d4419-0530-4412-9370-bdb0c3457103/sist-hd-602-s1-1998>

TEST ON GASES EVOLVED DURING COMBUSTION OF ELECTRIC CABLES

Part 2: Determination of degree of acidity of gases evolved during the combustion of materials taken from electric cables by measuring pH and conductivity

1 Scope

This part of IEC 754 specifies a method for the determination of the degree of acidity of gases evolved during the combustion of compounds taken from cable components.

2 Principle of the method

A pre-determined quantity of the test material is burned in a tube furnace. The evolved gases are trapped by bubbling through bottles filled with distilled or demineralized water.

The acidity is measured by determination of pH value. The conductivity of the solution is also measured.

STANDARD PREVIEW
(standards.iteh.ai)

3 Test apparatus

SIST HD 602 S1:1998

[https://standards.iteh.ai/catalog/standards/sist/210d4419-0530-4412-](https://standards.iteh.ai/catalog/standards/sist/210d4419-0530-4412-8727-18c357315193)

The principle diagram of the apparatus is shown in figures 1 to 5.

The assembly of the components which constitute the test apparatus shall be leak-tight. The connections between the tube and the first wash bottle and between the first and the second wash bottle shall be as short as possible.

3.1 Tube furnace

The effective length of the heating zone of the furnace shall be 500 mm to 600 mm and its inside diameter 40 mm to 60 mm. It shall be equipped with an adjusted electric heating system.

3.2 Tube

The furnace contains a fireproof tube made of silica resistant to the action of corrosive gases. The tube shall be approximately concentric to the tube furnace.

The inside diameter of the silica tube shall be within the limits of 32 mm to 45 mm. The initial clearance shall only allow for thermal expansion.

The tube protrudes on each side by a length L of:

- on the entrance side: $60 \text{ mm} \leq L \leq 200 \text{ mm}$;
- on the exit side: $60 \text{ mm} \leq L \leq 100 \text{ mm}$.