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AMENDMENT 1
AMENDEMENT 1

iTeh STANDARD PREVIEW
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**Test on gases evolved during combustion of materials from cables –
Part 2: Determination of acidity (by pH measurement) and conductivity**

IEC 60754-2:2011/AMD1:2019
<https://standards.iteh.ai/catalog/standards/sist/27029cd3-aba9-4ec2-8549-a7d1725041bf/iec-60754-2-2011-amd1-2019>

**Essai sur les gaz émis lors de la combustion des matériaux prélevés sur
câbles –**

Partie 2: Détermination de la conductivité et de l'acidité (par mesure du pH)





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FOREWORD

This amendment has been prepared by IEC technical committee 20: Electric cables.

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

FDIS	Report on voting
20/1883/FDIS	20/1890/RVD

Full information on the voting for the approval of this amendment can be found in the report on voting indicated in the above table.

The committee has decided that the contents of this amendment and the base publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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INTRODUCTION

Add, at the end of the first paragraph, the following new dashed item:

- Part 3: *Measurement of low level of halogen content by ion chromatography*

Replace the last sentence with the following new text:

This part of IEC 60754 is linked with both IEC 60754-1 and IEC 60754-3. The test procedure for obtaining the absorption solution in this part of IEC 60754 is the same as for IEC 60754-3 but the test procedure differs considerably from IEC 60754-1.

1 Scope

Add at the end of the first paragraph the following sentence:

The heating (combustion) procedure of this part of IEC 60754 is the same as in IEC 60754-3.

5.4 Combustion boats

In the last paragraph, replace the sentence “The combustion boat shall then be weighed to an accuracy of 0,1 mg until two identical consecutive weights are obtained.” with the following new text:

The combustion boat shall then be weighed with an analytical balance until two identical consecutive measurements in mg, rounded to one decimal figure, are obtained. The accuracy is described in 5.7.

5.6 Air supply system

Replace the second and third paragraphs, including the NOTE, with the following:

The flow rate of air, ρ , shall be $20 \text{ m/h} \times (\pi/4) \times D^2 \times 10^{-3}$ with a tolerance of $\pm 10 \%$, where D is the internal diameter of the quartz tube.

EXAMPLE

If $D = 30 \text{ mm}$, $20 \text{ m/h} \times (\pi/4) \times D^2 \times 10^{-3} = 14,1 \text{ l/h}$, and the flow rate can be in the range 12,7 l/h to 15,5 l/h.

If $D = 46 \text{ mm}$, $20 \text{ m/h} \times (\pi/4) \times D^2 \times 10^{-3} = 33,2 \text{ l/h}$, and the flow rate can be in the range 29,9 l/h to 36,5 l/h.

NOTE The flow rate of air, ρ , is related to the velocity, v , according to the formula

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$$\rho = v \times \frac{\pi D^2}{4} \times 10^{-3}$$

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where

D is the internal diameter of the tube (mm);

ρ is the flow rate of air (l/h);

v is the speed of air (m/h).

If $v = 20 \text{ m/h}$, this becomes, $\rho = 15,7 \text{ m/h} \times D^2 \times 10^{-3}$.

Replace under Method 2 the second sentence with the following:

The air shall be filtered and dried and shall be introduced on the inlet side of the quartz glass tube (see Figure 4).

5.7 Analytical balance

Replace the sentence with the following:

The balance shall have a resolution and an accuracy of $\pm 0,1 \text{ mg}$ or better.

5.8 Laboratory glassware

Replace “ISO 1042” with “ISO 1042 Class B”.

6.3 Mass of specimen

In the first paragraph, replace the first sentence with the following: Weigh the combustion boat (m_1) as defined in 5.4.

In the first paragraph, at the end of the second sentence, replace the text “which shall be weighed to an accuracy of 0,1 mg” with “which shall be weighed with an analytical balance so a measurement in mg, rounded to one decimal figure (m_2), is obtained.”

7.4 Washing procedure

Replace, at the end of the last sentence, “made up to 1 000 ml” with “made up to the 1 000 ml mark.”.

8.1 General method

Replace the second paragraph with the following new text:

If, in the case of reporting against a performance requirement, the coefficient of variation is higher than 5 % and the difference between the requirement and the mean value is less than or equal to 2,5 times the standard deviation, a further three tests shall be carried out and the mean value, standard deviation and coefficient of variation shall be recalculated using the six values. If the difference between the requirement and the mean value is more than 2,5 times the standard deviation, no additional tests are necessary.

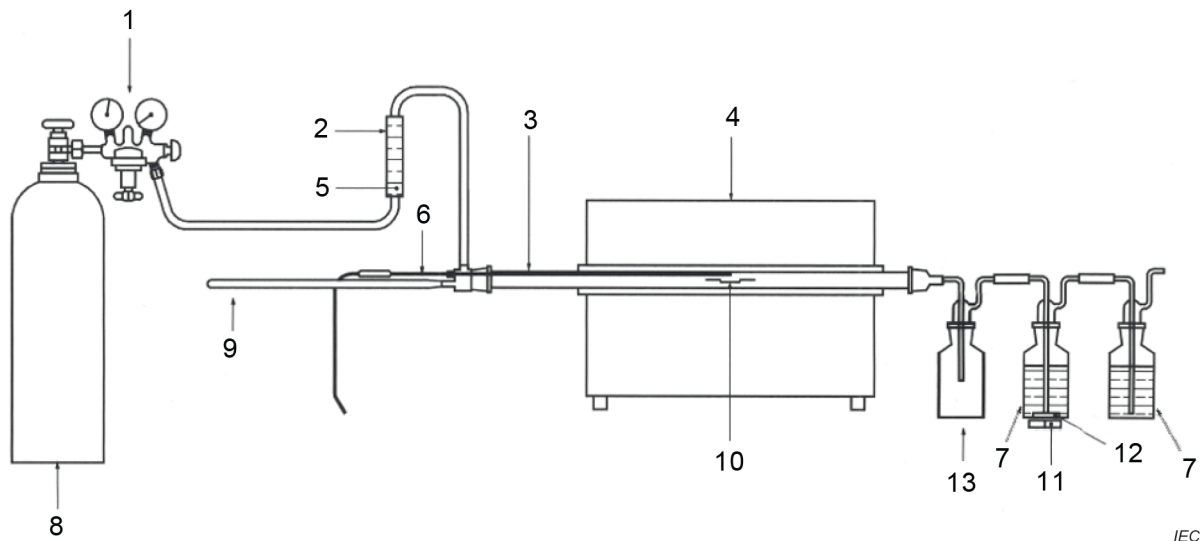
[IEC 60754-2:2011/AMD1:2019](#)

If, in the case of not reporting against a performance requirement, the coefficient of variation is higher than 5 %, a further three tests shall be carried out and the mean value, standard deviation and coefficient of variation shall be recalculated using the six values.

10 Test report

Figure 3

Replace Figure 3 with the following new Figure 3:



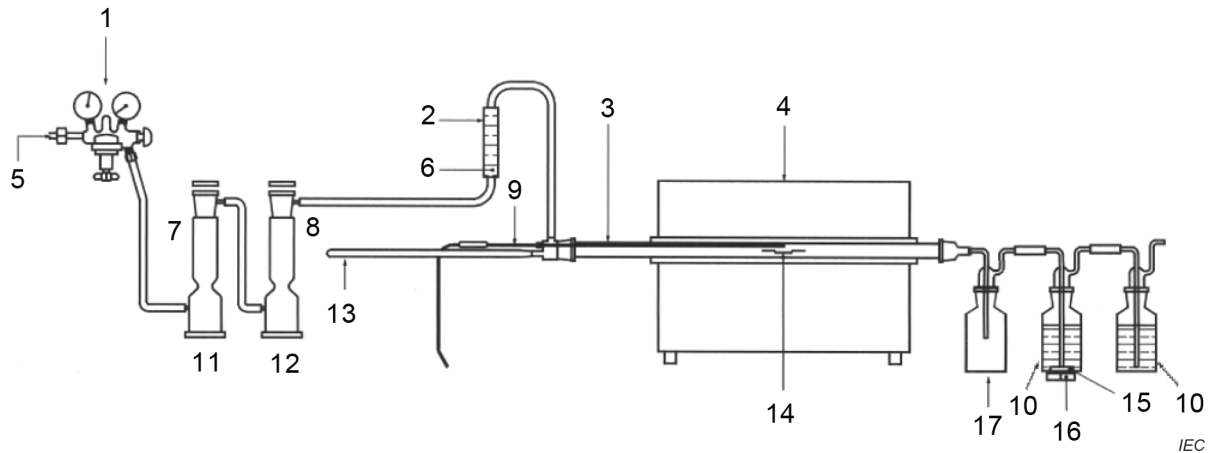
Key

- | | | | |
|---|-------------------------|----|--|
| 1 | Pressure reducing valve | 8 | Synthetic air |
| 2 | Flow meter | 9 | Device for inserting combustion boat containing test specimen |
| 3 | Quartz glass tube | 10 | Combustion boat containing test specimen |
| 4 | Furnace | 11 | Magnetic stirrer |
| 5 | Needle valve | 12 | Magnetic stirring bar |
| 6 | Thermocouple | 13 | Optional empty bottle to prevent suck-back of water into the quartz glass tube |
| 7 | Gas washing bottles | | |

Figure 3 – Test apparatus: method 1 – Use of synthetic or compressed air from a bottle

Figure 4

Replace Figure 4 with the following new Figure 4:



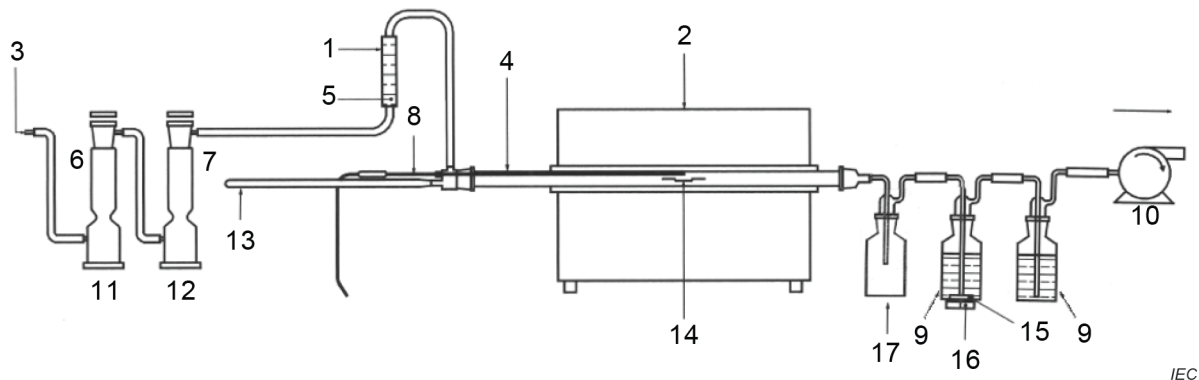
Key

- | | | | |
|---|-------------------------|----|--|
| 1 | Pressure reducing valve | 10 | Gas washing bottles |
| 2 | Flow meter | 11 | Air filtering |
| 3 | Quartz glass tube | 12 | Air drying |
| 4 | Furnace | 13 | Device for inserting combustion boat containing test specimen |
| 5 | Compressed air | 14 | Combustion boat containing test specimen |
| 6 | Needle valve | 15 | Magnetic stirring bar |
| 7 | Activated charcoal | 16 | Magnetic stirrer |
| 8 | Silica gel | 17 | Optional empty bottle to prevent suck-back of water into the quartz glass tube |
| 9 | Thermocouple | | |

Figure 4 – Test apparatus: method 2 – Use of laboratory compressed air supply

Figure 5

Replace Figure 5 with the following new Figure 5:



Key

- | | | | |
|---|---------------------|----|--|
| 1 | Flow meter | 10 | Suction pump |
| 2 | Furnace | 11 | Air filtering |
| 3 | Ambient air | 12 | Air drying |
| 4 | Quartz glass tube | 13 | Device for inserting combustion boat containing test specimen |
| 5 | Needle valve | 14 | Combustion boat containing test specimen |
| 6 | Activated charcoal | 15 | Magnetic stirring bar |
| 7 | Silica gel | 16 | Magnetic stirrer |
| 8 | Thermocouple | 17 | Optional empty bottle to prevent suck-back of water into the quartz glass tube |
| 9 | Gas washing bottles | | |

**Figure 5 – Test apparatus: method 3 –
 Use of ambient air sucked by means of a suction pump**

Bibliography

Add the following new references:

IEC 60754-1, *Test on gases evolved during combustion of materials from cables – Part 1: Determination of the halogen acid gas content*

IEC 60754-3, *Test on gases evolved during combustion of materials from cables – Part 3: Measurement of low level of halogen content by ion chromatography*