SLOVENSKI STANDARD

SIST EN 366:1996

01-februar-1996

Varovalna obleka - Zaščita pred učinki toplote in ognja - Metoda preskušanja za vrednotenje materialov in izdelkov iz teh materialov, ki so izpostavljeni izvoru toplotnega sevanja

Protective clothing - Protection against heat and fire - Method of test: Evaluation of materials and material assemblies when exposed to a source of radiant heat

Schutzbekleidung - Schutz gegen Hitze und Feuer - Prüfmethode: Beurteilung von Materialien und Materialkombinationen die einer Hitze-Strahlungsquelle ausgesetzt sind

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Vetements de protection - Protection contre la chaleur et le feu - Méthodes d'essai - Evaluation de matériaux exposés a une source de chaleur radiante

SIST EN 366:1996
https://standards.iteh.ai/catalog/standards/sist/d70dl3c8-303a-402c-bd25-11dc91612b56/sist-en-366-1996

Ta slovenski standard je istoveten z: EN 366:1993/AC:1993

ICS:

13.340.10	Varovalna obleka	Protective clothing

SIST EN 366:1996 **en**

2003-01.Slovenski inštitut za standardizacijo. Razmnoževanje celote ali delov tega standarda ni dovoljeno.

SIST EN 366:1996

iTeh STANDARD PREVIEW
(standards.iteh.ai)

SIST EN 366:1996
https://standards.iteh.ai/catalog/standards/sist/d76df3c8-305a-402c-bd25-11dc91612b56/sist-en-366-1996

SIST EN 366:1996

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 366:1993

March 1993

UDC 614.895.5:687.174:614.873.6:620.193.94:536.4

Descriptors: Personal protective equipment, protective clothing, heat protection, heat resistant materials, fire resistant materials, filing, thermal tests, heat transfer, heat transfer coefficient, radiation sources

English version

Protective clothing - Protection against heat and fire - Method of test: Evaluation of materials and material assemblies when exposed to a source of radiant heat

iTeh STANDARD PREVIEW
(standards.iteh.ai)

Vêtements de protection - Protection contre la chaleur et le feu - Méthodes d'essai - Evaluation de matériaux et ensembles de matériaux exposés à une source de chaleur radiante

Schutzbekleidung - Schutz gegen Hitze und Feuer - Prüfmethode: Beurteilung von Materialien und Materialkombinationen die einer Hitze-Strahlungsquelle ausgesetzt sind

SIST EN 366:1996
https://standards.iteh.ai/catalog/standards/sist/d76df3c8-305a-402c-bd25-11dc91612b56/sist-en-366-1996

This European Standard was approved by CEN on 1993-03-01. CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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

The European Standards exist in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

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

CEN

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

Central Secretariat: rue de Stassart,36 B-1050 Brussels

© 1993 Copyright reserved to CEN members

Ref. No. EN 366:1993 E

SIST EN 366:1996

Contents list

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 366:1996
https://standards.iteh.ai/catalog/standards/sist/d76df3c8-305a-402c-bd25-11dc91612b56/sist-en-366-1996

SIST EN 366:1996

Foreword

This European Standard was prepared by CEN/TC 162 "Protective clothing including hand and arm protection and lifejackets" of which the secretariat is held by DIN.

This European Standard has been prepared under a mandate given to CEN by the Commission of the European Communities and the European Free Trade Association, and supports essential requirements of EC Directive(s).

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 1993, and conflicting national standards shall be withdrawn at the latest by September 1993.

In accordance with the CEN/CENELEC Internal Regulations, following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

This European Standard is essentially identical with ISO 6942:1981.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 366:1996
https://standards.iteh.ai/catalog/standards/sist/d76df3c8-305a-402c-bd25-11dc91612b56/sist-en-366-1996

SIST EN 366:1996

1 Introduction

Protective clothing against radiant heat is worn at different occasions and accordingly the radiation intensity (characterized by the heat flux density) acting on the clothing material extends over a wide range. This European Standard describes two test methods which can be applied to all sorts of materials, but, according to the intended use of the material, the heat flux density has to be chosen properly and the results have to be interpreted correctly.

Industrial workers or firefighters may be exposed to a relativly low radiation intensity over a long period of time. Therefore, the material of their clothing should be tested at a low heat flux density. It should not be changed or destroyed in the test with method A and from the results of method B the heat transmission factor which characterizes the steady state should be sufficiently low. The times to the different heat transfer levels are of less significance and it may even be impossible to determine them in this case.

On the other hand, industrial workers or firefighters may be exposed to medium radiation intensities for relatively short periods of time or to high radiation intensities for very short periods of time. In the latter case, the clothing material may be changed or even destroyed. Therefore, in this case, the materials for the protective clothing should be tested at medium and high heat flux densities. At medium heat flux densities the reaction on method A and the heat transmission factor measured with method B characterize the material. At high heat flux densities the times to the different heat transfer levels are of most importance, whereas it may be impossible to determine the transmission factor in most cases, because the material is changed during the test and no steady state is reached.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 366:1996
https://standards.iteh.ai/catalog/standards/sist/d76df3c8-305a-402c-bd25-11dc91612b56/sist-en-366-1996

2 Scope

This European Standard specifies two complementary methods (method A and method B) for determining the behaviour of materials for heat protective clothing subjected to heat radiation.

These tests are carried out on representative single or multilayer textiles or other materials intended for clothing for protection against heat. They are also applicable to assemblies, which correspond to the overall build up of a heat protective clothing assembly with or without underclothing.

Method A serves for visual assessement of any changes in the material after the action of heat radiation. With method B the protective effect of the materials is determined. The materials may be tested either by both methods or only by one of them.

The tests according to these two methods serve to classify materials; however, to be able to make a statement or prediction as to the suitability of a material for protective clothing additional criteria must be taken into account.

Since the tests are carried out at room temperature the results do not necessarily correspond to the behaviour of the materials at higher ambient temperatures and therefore are only to a limited extent suitable for predicting the performance of the protective clothing made from the materials under test.

SIST EN 366:1996

3 Normative References

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited in the appropriate places in the text and the publications are listed hereafter. For dated references subsequent amendments to or revisions of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 20139 Textiles - Standard atmospheres for conditioning and testing

4 Definitions

For the purposes of this standard, the following definitions apply.

4.1 Change in appearance of the specimen

All changes in the appearance of the material (shrinkage, formation of char, discolouration, scorching, glowing, melting, etc.).

4.2 Heat transfer levels (t1, t2 and t3)

Three different levels, characterized by the time from the start of the irradiation until the total heat transmitted through the specimen (t1 and t2) or the momentary heat flux at the back of the specimen (t3) reaches a certain level.

iTeh STANDARD PREVIEW
(standards.iteh.ai)

4.3 Heat transmission factor (TF)

SIST EN 366:1996
https://standards.iteh.ai/catalog/standards/sist/d76df3c8-305a-402e-bd25-11da91612b56/sist-en-366-1996

A measure of the fraction of heat transmitted through a specimen exposed to a source of radiant heat. It is numerically equal to the ratio of the transmitted to the incident heat flux density.

4.4 Specimen

Specimen consisting of one or several layers of fabric or other materials.

5 Principle

5.1 Method A

A test specimen is fixed to a free standing frame (specimen holder) and exposed to a specific level of thermal radiation. There is only a very low conduction of heat away at the back of the specimen; this represents a severe condition for the material. Changes in appearance of the specimen are recorded.

5.2 Method B

A test specimen is fixed over the front of a calorimeter and exposed to a specific level of thermal radiation. Because of the mass of the calorimeter block, there is conduction of heat away from the back of the specimen; this represents a severe condition for the wearer of protective clothing made from the specimen material. From the recorded data of temperature rise of the calorimeter versus time the heat transmission factor and the different heat transfer levels are determined.

SIST EN 366:1996

6 Apparatus

The test apparatus consists of the following items, which are used for both test methods:
- source of radiation (6.1);
- test frame (6.2);
- specimen holder (6.3).

For method B only the following is required in addition:
- calorimeter (6.4);
- temperature measuring and recording device (6.5).

6.1 Source of radiation

The radiation source consists of six silicon carbide (SiC) heating rods, the technical specifications of which are as follows:

- total length: 356 mm;
- length of heating part: 178 mm;
- diameter: 7,9 mm;
- electrical resistance: 3,6 Ω ± 10 % at 1 070°C.

These rods are placed in a U-shaped support made of insulating, flame resistant material so that they are arranged horizontally and in the same vertical plane. Figure 1 shows the constructional details of the support and the arrangement of the heating rods, which shall be mounted very freely in the grooves of the support in order to avoid mechanical stress.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 366:1996
https://standards.iteh.ai/catalog/standards/sist/d76df3c8-305a-402c-bd25-11dc91612b56/sist-en-366-1996

all dimensions in mm

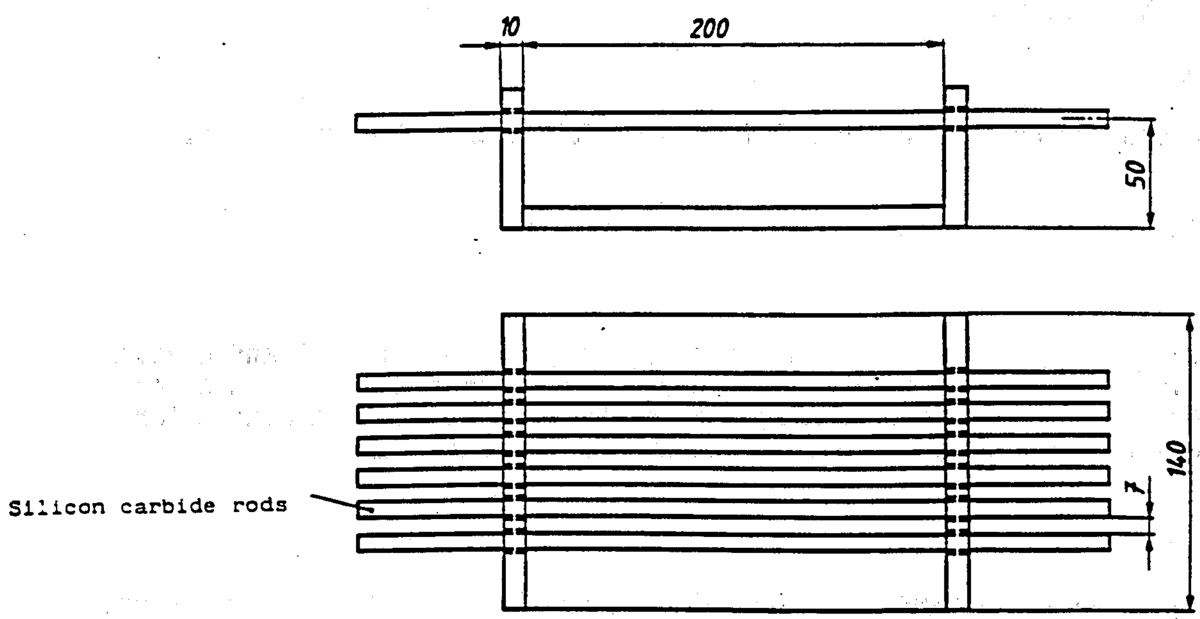

Figure 1. Source of radiation

SIST EN 366:1996

A diagram of a possible electricity supply for the radiation source is shown in figure 2. The six rods are arranged into two groups of three rods placed in series. The two groups are connected in parallel and are wired to the 220 V supply through a pre-resistance of 1Ω. For other supply voltages the circuit has to be changed accordingly. If the main voltage shows variations of more than ± 1 % during a measurement a stabilization has to be provided.

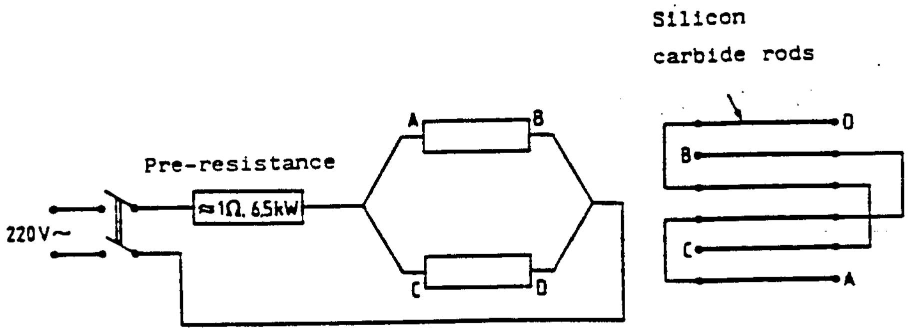

Figure 2. Circuit diagram for heating rods

NOTE: The electrical connections of the heating rods shall be made carefully (e.g. by means of a stranded aluminium band), taking into consideration that they become very hot. Precautions shall be taken to avoid short circuits between the rods.
The correct operation of the radiation source may be checked by using an infrared thermometer to measure the temperature of the silicon carbide rods. After allowing the radiation source to burn in for about five minutes, the rods should have a temperature of about 1 100°C.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
SIST EN 366:1996
https://standards.iteh.ai/catalog/standards/sist/d70d13c8-305a-402c-bd25-11dc91612b56/sist-en-366-1996

6.2 Test frame

Figure 3 shows a possible construction form of the test frame. It basically consists of two plates about 300 mm wide and 20 mm thick of non-combustible board.

all dimensions in mm

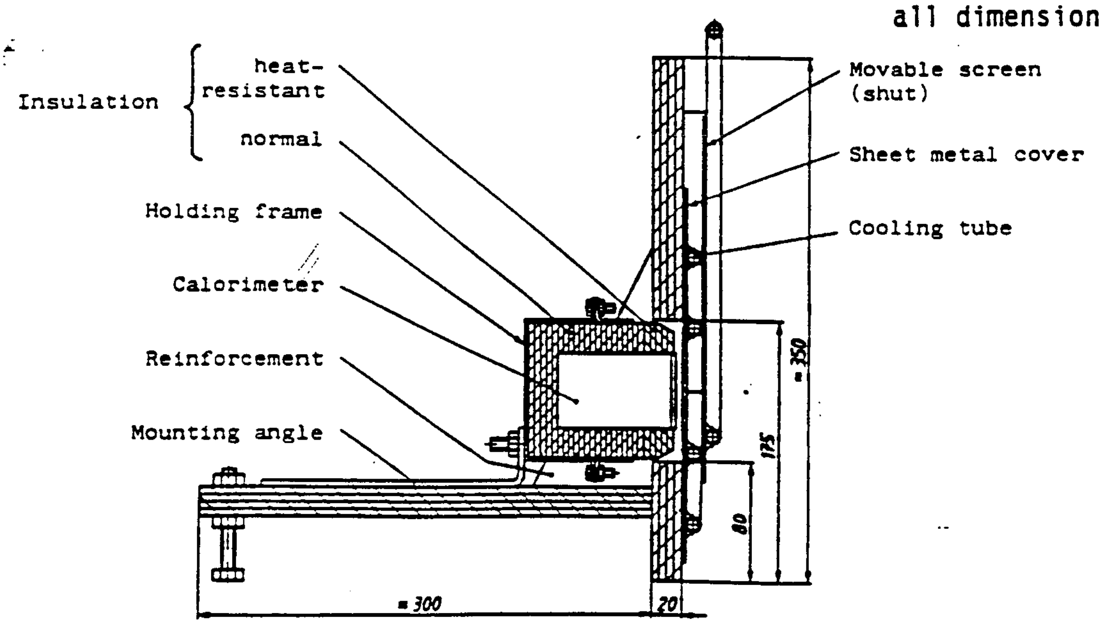

Figure 3. Test frame