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**Fire hazard testing — Part 8-1: Heat  
release — General guidance**

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## Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law.

This Standard has been made based on **IEC 60695-8-1:2001** *Fire hazard testing — Part 8-1: Heat release — General guidance* for the purposes of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

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## Fire hazard testing — Part 8-1: Heat release — General guidance

**Introduction** This Japanese Industrial Standard has been prepared based on the first edition of **IEC 60695-8-1** *Fire hazard testing — Part 8-1: Heat release — General guidance* published in 2001 without modifying the technical contents.

Fires are responsible for creating hazards to life and property as a result of the generation of heat (thermal hazard), toxic and/or corrosive compounds and obscuration of vision due to smoke. Fire risk increases as the heat released increases, possibly leading to a flash-over fire.

One of the most important measurements in fire testing is the measurement of heat release, and it is used as an important factor in the determination of fire hazard; it is also used as one of the parameters in fire safety engineering calculations.

The measurement and use of heat release data, together with other fire test data, can be used to reduce the likelihood of (or the effects of) fire, even in the event of foreseeable abnormal use, malfunction or failure of electrotechnical products.

When a material is heated by some external source, fire effluent can be generated and can form a mixture with air which can ignite and initiate a fire. The heat released in the process is carried away by the fire effluent-air mixture, radiatively lost or transferred back to the solid material, to generate further pyrolysis products, thus continuing the process.

Heat may also be transferred to other nearby products, which may burn, and then release additional heat and fire effluent.

The rate at which calorific (thermal) energy is released in a fire is defined as the heat release rate. Heat release rate is important because of its influence on flame spread and on the initiation of secondary fires. Other characteristics are also important, such as ignitability, flame spread and the side-effects of the fire (see the **IEC 60695** series of standards).

**1 Scope** This part of **JIS C 60695** provides guidance in the assessment of heat release from electrotechnical products and materials from which they are constructed.

Heat release data can be used as part of fire hazard assessment and in fire safety engineering, as described in **JIS C 60695-1-1**.

Make use of basic safety standards in the preparation of relevant standards.

**NOTE :** The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are **IDT** (identical), **MOD** (modified), and **NEQ** (not equivalent) according to **ISO/IEC Guide 21**.

**IEC 60695-8-1 : 2001** *Fire hazard testing — Part 8-1: Heat release — General guidance* (IDT)

**2 Normative references** The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. If the indication of the year of coming into effect or the year of publication is given to these referred standards, only the edition of the indicated year constitutes the provision of this Standard but the revision and amendment made thereafter do not apply.

JIS C 60695-1-1:2000 *Fire hazard testing — Part 1: Guidance for assessing fire hazard of electrotechnical products — Section 1: General guidance*

NOTE : IEC 60695-1-1:1999 *Fire hazard testing — Part 1-1: Guidance for assessing the fire hazard of electrotechnical products — General guidelines* is equivalent to the said standard.

In addition, JIS C 60695-1-1:2000 is identical with IEC 60695-1-1:1995.

ISO/IEC 13943:2000 *Fire safety — Vocabulary*

**3 Definitions** For the purpose of this part of JIS C 60695, definitions taken from ISO/IEC 13943, together with the following definitions, apply.

**3.1 heat release** thermal energy which is released by the combustion of an item under specified conditions

NOTE : It is expressed in joules.

(ISO/IEC 13943, definition 87)

**3.2 heat release rate** thermal energy released per unit time by an item during combustion under specified conditions

NOTE : It is expressed in watts.

(ISO/IEC 13943, definition 88)

**3.3 heat of combustion** thermal energy produced by combustion of unit mass of a given substance

NOTE : It is expressed in joules per kilogram.

(ISO/IEC 13943, definition 86)

**3.4 gross heat of combustion** heat released per unit mass when a material or product burns completely and the combustion products are in their standard states

NOTE : The standard heat of combustion of a substance is defined in thermochemical terms as the enthalpy change that occurs when one mole of a substance undergoes complete combustion under standard conditions. In the fire science community, heat of combustion is also referred to as “gross calorific value” or as “gross heat of combustion”, and the units used are energy per unit mass rather than energy per mole. The water formed as a product of combustion is considered to be in the liquid state. For a compound containing carbon and hydrogen, for example, complete combustion means the conversion of all the carbon to carbon dioxide gas, and conversion of all the hydrogen to liquid water.