JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS T 8024 : 2020

(JSAA/JSA)

Clothing for protection against heat and flame — Determination of heat transmission on exposure to both flame and radiant heat

ICS 13.340.10
Reference number : JIS T 8024 : 2020 (E)

Date of Establishment: 2009-07-25

Date of Revision: 2020-03-25

Date of Public Notice in Official Gazette: 2020-03-25

Investigated by: Japanese Industrial Standards Committee

Standards Board for ISO area

Technical Committee on Safety

JIS T 8024 : 2020, First English edition published in 2020-12

Translated and published by: Japanese Standards Association
Mita MT Building, 3-13-12, Mita, Minato-ku, Tokyo, 108-0073 JAPAN

In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

Printed in Japan AH/AT

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Foreword

This Japanese Industrial Standard has been revised by the Minister of Economy, Trade and Industry and the Minister of Health, Labour and Welfare through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Safety Appliances Association (JSAA)/ Japanese Standards Association (JSA) with a draft being attached, based on the provision of Article 12, paragraph (1) of the Industrial Standardization Act applied mutatis mutandis pursuant to the provision of Article 16 of the said Act. This edition replaces the previous edition (**JIS T 8024**: 2009), which has been technically revised.

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Introduction

This Japanese Industrial Standard has been prepared based on ISO 17492 : 2019, Edition 2, with some modifications of the technical contents in consideration of convenience in usage.

The vertical lines on both sides and dotted underlines indicate changes from the corresponding International Standard. A list of modifications with the explanations is given in Annex JA.

The measurement of the thermal energy transferred from the exterior of a material to the interior can be a significant factor in determining the level of protection or insulation provided by an assembly. While full-scale test methods are a better means of determining how an assembly performs, small scale tests such as those described in JIS T 8020 and JIS T 8021 can be used in establishing benchmarks of performance for the materials from which these assemblies are made. These tests specified in JISs enable the user of a material to anticipate how the properties of a particular material could affect the performance of the assembly when exposed to a high heat flux.

The purpose of an assembly for thermal protection is to prevent or reduce the potential for skin burn injury to the wearer. The performance of a product can be determined by comparing the total exposure energy to that which is transferred through the protective material to a known point where the thermal exposure would produce a burn injury in human tissue. The total exposure energy required to cause the onset of a second-degree burn in human tissue is identified as the thermal-protective index (TPI). In the TPI analysis of the data, the specimen is exposed to steady heat until the energy transferred through the specimen is equivalent to the energy that would cause the onset of a second-degree burn injury (e.g. a blister).

Other uses include comparison of the insulation from a high-temperature exposure in terms other than the TPI analysis of human tissue. For these uses, an alternate method of evaluating the heat transfer is provided. The total energy transferred that causes a temperature rise of the copper sensor by 12 °C and 24 °C is determined as the heat-transfer index-thermal (HTI-T_y). In the HTI-T_y analysis of the data, the specimen is exposed to heat until a specified amount of energy is transferred. This is a measure of the insulation performance and thermal capacity of the specimen.

Unlike what is specified in JIS T 8020 and JIS T 8021, the heat source in this test method is adjusted so that the radiant heat becomes equivalent to the convective heat wherever possible, and this equalized radiant/convective output is set to a thermal en-