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**Textiles — Determination of dynamic
hygroscopic heat generation —
Part 1: Test method for maximum
generated hygroscopic heat temperature
measurement by humidification**

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In the event of any doubts arising as to the contents,
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Contents

	Page
Introduction	1
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Principle	2
5 Testing condition	2
6 Test apparatus	3
7 Reagents and materials	6
8 Preparation of specimens	6
9 Test	6
10 Test report	8
Annex A (normative) Determination of high humidity air flowrate	9
Annex B (informative) Index of hygroscopic heat generation effect	11
Bibliography	12
Annex JA (informative) Comparison table between JIS and corresponding International Standard	13

Foreword

This Japanese Industrial Standard has been established by the Minister of Economy, Trade and Industry, through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Act.

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- Type of industrial property right: Patent number 5503675
- Registration date: March 20, 2014
- Designation: Sorption exothermic property measuring instrument and measuring method

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JIS L 1952 series consists of the following 2 parts under the general title “*Textiles — Determination of dynamic hygroscopic heat generation —*”:

Part 1: Test method for maximum generated hygroscopic heat temperature measurement by humidification

Part 2: Test method for heat keeping index of generated heat by humidification

Textiles — Determination of dynamic hygroscopic heat generation — Part 1 : Test method for maximum generated hygroscopic heat temperature measurement by humidification

Introduction

This Japanese Industrial Standard has been prepared based on **ISO 18782:2015**, Edition 1, with some modifications on the configuration and the technical contents.

The dotted underlines indicate changes from the corresponding International Standard. A list of modifications with the explanations is given in Annex JA.

1 Scope

This Standard specifies a test method for the determination of generated hygroscopic heat temperature by blowing low then high humidity air on one surface (skin-contact surface) of a textile. It is applicable to all kinds of sheet-shaped textile materials such as fabrics, knit and non-woven fabrics.

NOTE The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 18782 : 2015 *Textiles — Determination of dynamic hygroscopic heat generation* (MOD)

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 21-1**.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS L 0105 *General principles of physical testing methods for textiles*

JIS L 0208 *Glossary of terms used in textile industry — Testing*

JIS L 0803 *Standard adjacent fabrics for staining of colour fastness test*

NOTE Corresponding International Standard : ISO 105-F02 *Textiles — Tests for colour fastness — Part F02 : Specification for cotton and viscose adjacent fabrics*

JIS R 3503 *Glass apparatus for chemical analysis*

JIS Z 8401 *Rounding of numbers*

3 Terms and definitions

For the purpose of this Standard, the terms and definitions given in **JIS L 0105** and **JIS L 0208**, and the following apply.

3.1

generated hygroscopic heat

sorption heat generated by the loss of kinetic energy, etc. of water molecules which are adsorbed at a surface of textile material and then react with fibre molecules

3.2

initial temperature T_{initial}

temperature on one surface (measuring surface) of specimen during the low humidity air blow (average temperature during 60 s immediately before the switching to high humidity air blow)

3.3

generated hygroscopic heat temperature ΔT

temperature difference on one surface (measuring surface) of specimen between the initial temperature and the temperature after the high humidity air blow

3.4

maximum temperature T_{max}

peak temperature on one surface (measuring surface) of specimen during the high humidity air blow

3.5

maximum generated hygroscopic heat temperature ΔT_{max}

peak value of generated hygroscopic heat temperature ΔT

4 Principle

Low humidity air is blown on one surface (measuring surface) of a specimen for humidity conditioning, then high humidity air is blown on the same surface for humidification. The temperature of the measuring surface of the specimen is measured during testing. When the air blow is switched from low humidity to high humidity, the temperature on the measuring surface increases and reaches the peak, then decreases. The maximum generated hygroscopic heat temperature ΔT_{max} at this time is obtained.

In this Standard, the high humidity air flowrate is determined in advance, using a control specimen so that the maximum generated hygroscopic heat temperature ΔT_{max} becomes $2.8\text{ }^{\circ}\text{C} \pm 0.3\text{ }^{\circ}\text{C}$.

5 Testing condition

5.1 Low humidity air

The low humidity air is taken from the constant temperature and humidity chamber (6.1) in which the temperature is set at $20\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ and the humidity at $(40 \pm 3)\text{ \% RH}$. The flowrate is $1.0\text{ L/min} \pm 0.1\text{ L/min}$.

5.2 High humidity air

The high humidity air is taken from the constant temperature and humidity chamber (6.1) in which the temperature is set at $20\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ and the humidity at $(40 \pm 3)\text{ \% RH}$, and humidified by bubbling through the bubbling bottle set at $20\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ (6.2.2).

NOTE High humidity air is controlled by the flowrate only; therefore, humidity measurements are not essential. However, tests have shown that the humidity stabilizes at $(90 \pm 5)\text{ \% RH}$.

6 Test apparatus

6.1 Constant temperature and humidity chamber, capable of maintaining the temperature at $20\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$ and the humidity at $(40 \pm 3)\text{ \% RH}$. The hygroscopic heat generation testing apparatus (6.2) is placed in the chamber.

A constant temperature and humidity vessel may be used instead of the constant temperature and humidity chamber, if its capacity is sufficient to accommodate the hygroscopic heat generation testing apparatus (6.2) and there is no interference with test works.

6.2 Hygroscopic heat generation testing apparatus

The schematic diagram of the testing apparatus is shown in Figure 1. All devices are placed in the constant temperature and humidity chamber (6.1), except the controller (6.2.3) and the monitoring recorder (6.3). Air is blown from one air supply line to four test positions.

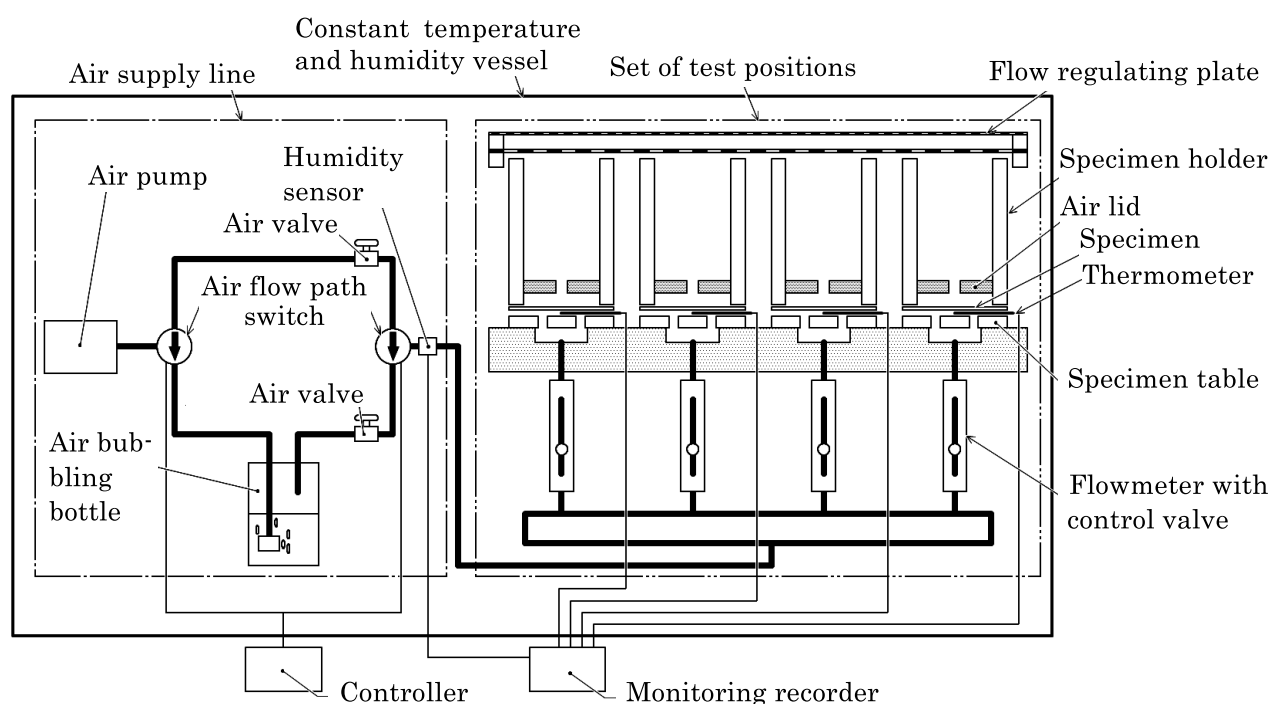


Figure 1 Schematic diagram of testing apparatus