JIS

JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS A 1460 : 2015

Determination of the emission of formaldehyde from building boards—Desiccator method

ICS 13.040.99;71.080.80;79.060.10
Reference number : **JIS A 1460** : **2015** (**E**)

Date of Establishment: 2001-03-20
Date of Revision: 2015-03-20
Date of Public Notice in Official Gazette: 2015-03-20
Investigated by: Japanese Industrial Standards Committee
Standards Board for ISO area
Technical Committee on Architecture

JIS A 1460:2015, First English edition published in 2015-10

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

Printed in Japan

IH/AT

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Foreword

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

Consequently, **JIS A 1460**:2001 is replaced with this Standard.

Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, applications for a patent after opening to the public or utility model rights. The relevant Minister and the Japanese Industrial Standards Committee are not responsible for identifying any of such patent rights, applications for a patent after opening to the public or utility model rights.

JAPANESE INDUSTRIAL STANDARD **JIS A 1460 : 2015**

Determination of the emission of formaldehyde from building boards—Desiccator method

Introduction

This Japanese Industrial Standard was established in 2001 and the revision this time is mainly to correspond to **ISO** Standard and **JIS** established thereafter, which are related to this Standard. The comparison table between previous and current editions of this Standard on technically significant revisions is given in Annex A.

No corresponding International Standard has been established at this point.

1 Scope

This Standard specifies the determination method of quantity of formaldehyde emitted from building boards.

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 A 1902-1	*Determination of the emission of volatile organic compounds and aldehydes by building products—Sampling, preparation of test specimens and testing condition—Part 1: Boards, wallpaper and floor materials*
JIS K 0050	*General rules for chemical analysis*
JIS K 0557	*Water used for industrial water and wastewater analysis*
JIS K 8001	*General rule for test methods of reagents*
JIS K 8005	*Reference materials for volumetric analysis*
JIS K 8027	*Acetylacetone (Reagent)*
JIS K 8180	*Hydrochloric acid (Reagent)*
JIS K 8355	*Acetic acid (Reagent)*
JIS K 8359	*Ammonium acetate (Reagent)*
JIS K 8576	*Sodium hydroxide (Reagent)*
JIS K 8625	*Sodium carbonate (Reagent)*
JIS K 8637	*Sodium thiosulfate pentahydrate (Reagent)*
JIS K 8659	*Starch, soluble (Reagent)*
JIS K 8872	*Formaldehyde solution (Reagent)*
JIS K 8913	*Potassium iodide (Reagent)*
JIS K 8920	*Iodine (Reagent)*

JIS K 8951 *Sulfuric acid (Reagent)*

JIS R 3503 *Glass apparatus for chemical analysis*

JIS R 3505 *Volumetric glassware*

JIS Z 8401 *Guide to the rounding of numbers*

JIS Z 8703 *Standard atmospheric conditions for testing*

3 Principle of test

The test for determination of quantity of formaldehyde emitted from building boards by desiccator method is carried out by using the glass desiccator as shown in figure 1. The emitted quantity of formaldehyde is obtained from the concentration of formaldehyde absorbed in distilled water or ion-exchanged water measured 24 h after the specified surface area of the test specimens are placed in the desiccator in which the specified amount of distilled water or ion-exchanged water is contained under the controlled temperature.

The principle for determination of concentration of formaldehyde absorbed in distilled water or ion-exchanged water is based on the Hantzsch reaction in which formaldehyde reacts with ammonium ions and acetylacetone to yield diacetyldihydrolutidine (DDL).

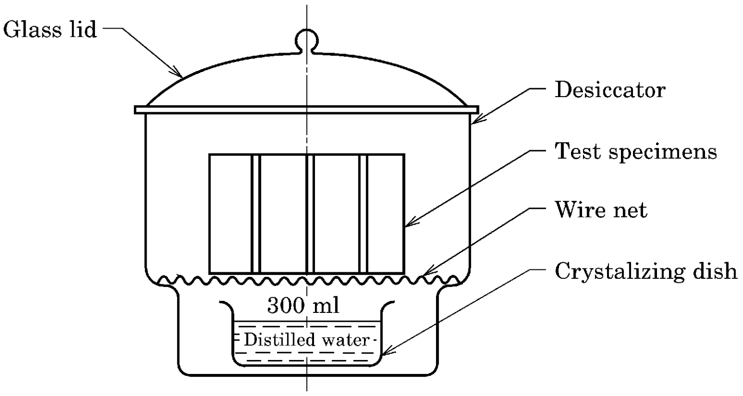
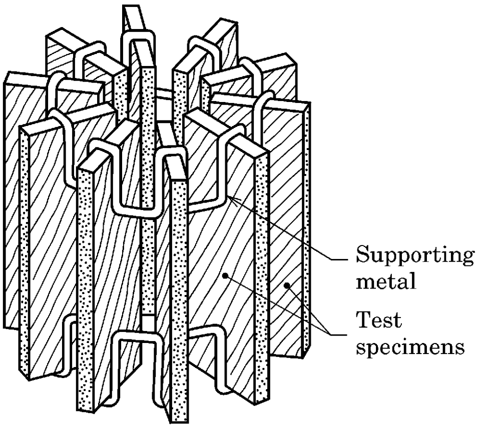
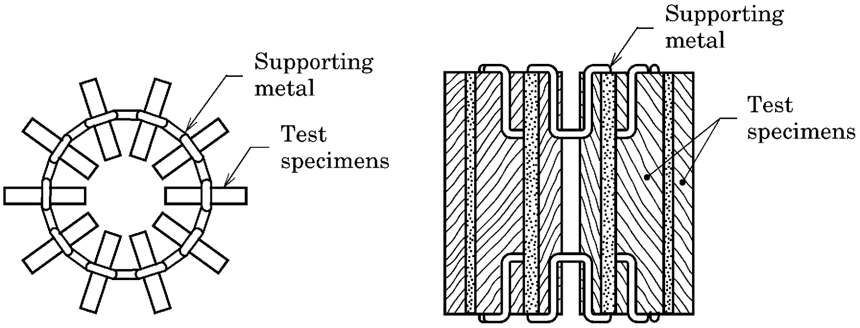


Figure 1 Desiccator method (configuration diagram)



a) **Sketch**



b) **Top view**

c) **Side view**

Figure 2 Test specimen supporting metal (example)

4 General conditions

4.1 Test atmosphere

The conditions of test place shall be Class 0.5 at 20 °C in temperature (20 °C ± 0.5 °C) specified in **JIS Z 8703**.

4.2 Common conditions

The common conditions shall be as follows.

a) **General matters in chemical analysis** General matters common to chemical analysis shall be according to **JIS K 0050**.

b) **Water** The water to be used in this Standard shall be that of A1 to A4 specified in **JIS K 0557** or ion-exchanged water or distilled water equivalent to A1 to A4 of **JIS K 0557** in quality.

5 Apparatus and instruments

The apparatus and instruments shall be as follows.

a) **Measuring apparatuses for temperature and humidity** The thermometer shall be that capable of measuring the temperature of air by 0.1 °C in precision. Also, the hygrometer shall be that capable of measuring the relative humidity by 5 % in precision.

b) **Spectrophotometer** The spectrophotometer shall be that capable of measuring the absorbance in the range of 410 nm to 415 nm in wavelength.

NOTE : The cell whose optical path length is 50 mm or more should be used.

c) **Thermostatic water bath** The thermostatic water bath shall be that capable of maintaining the temperature at 65 °C ± 2 °C.

d) **Chemical balance** The chemical balance shall be that capable of weighing the mass of 100 g to 200 g and reading the difference of 0.1 mg.

e) **Desiccator** The desiccator shall have airtightness and be of 240 mm in nominal dimension specified in **JIS R 3503**.

f) **Glass crystallizing dish** The glass crystallizing dish which is filled with distilled water or ion-exchanged water shall be that of 120 mm in outside diameter, 115 mm ± 1 mm in inside diameter and 60 mm ± 2 mm in depth.

Furthermore, the glass crystallizing dish with a pour spout at the edge is desirable.

g) **Volumetric flask** The volumetric flasks shall be those of 100 ml and 1 000 ml in nominal capacity specified in **JIS R 3505**.

h) **Volumetric pipette** The volumetric pipettes shall be those of 5 ml, 10 ml, 15 ml, 20 ml, 25 ml, 50 ml and 100 ml (calibrated at 20 °C) in nominal capacity specified in **JIS R 3505** or an automatic pipette having the equivalent quality.

i) **Burette** The burette shall be that specified in **JIS R 3505** or an automatic metering device.

j) **Flask with ground stopper** The flask with ground stopper shall be an Erlenmeyer flask with interchangeable ground joint of 100 ml in nominal capacity specified in **JIS R 3503**.

k) **Test specimen supporting metal** The test specimen supporting metal for fixing test specimens in the desiccator as shown in figure 2 shall be that made of stainless steel.

l) **Stainless steel wire net** The wire net on which the test specimen supporting metal with test specimens is placed in the desiccator shall be that of 240 mm in diameter whose intervals of the mesh of the stainless steel wire are wider than 15 mm.

6 Preparation of reagents

The preparation of reagents shall be as follows.

a) **Iodine solution (0.05 mol/L)** The solution shall be prepared in such a way that 40 g of potassium iodide specified in **JIS K 8913** is dissolved in 25 ml of water, 13 g of iodine specified in **JIS K 8920** is also dissolved in it, then it is transferred into a 1 000 ml volumetric flask, three drops of hydrochloric acid specified in **JIS K 8180** are added, and water is added up to the marked line.

b) **Sodium thiosulfate solution (0.1 mol/L)** The solution shall be prepared in such a way that 26 g of sodium thiosulfate pentahydrate specified in **JIS K 8637** and 0.2 g of sodium carbonate specified in **JIS K 8625** are dissolved in 1 000 ml of water free from dissolved oxygen. The mixture is allowed to stand for two days, then standardized according to **JA.6.4 t**) **2**) of **JIS K 8001** by using potassium iodate specified in **JIS K 8005**.

c) **Sodium hydroxide solution (1 mol/L)** The solution shall be prepared in such a way that 40 g of sodium hydroxide specified in **JIS K 8576** is dissolved in 200 ml of water, it is transferred into a 1 000 ml volumetric flask, then water is added up to the marked line.

d) **Sulfuric acid solution (1 mol/L)** The solution shall be prepared in such a way that 56 ml of sulfuric acid specified in **JIS K 8951** is dissolved in 200 ml of water, it is transferred into a 1 000 ml volumetric flask, then water is added up to the marked line.

e) **Starch solution** The solution shall be prepared in such a way that 1 g of starch (soluble) specified in **JIS K 8659** is thoroughly mixed with 10 ml of water, it is added to 200 ml of hot water while stirring, boiled for about 1 min and cooled, then filtered.

f) **Formaldehyde standard stock solution** The solution shall be prepared in such a way that 1 ml of formaldehyde solution specified in **JIS K 8872** is taken into a 1 000 ml volumetric flask, then water is added up to the marked line.

The concentration of formaldehyde in this solution shall be obtained according to the following procedure.

Take an aliquot of 20 ml of formaldehyde standard stock solution mentioned above into a 100 ml Erlenmeyer flask with interchangeable ground joint, add 25 ml of 0.05 mol/L iodine solution prepared by using the iodine specified in **JIS K 8920** and 10 ml of 1 mol/L sodium hydroxide solution, and leave it at room temperature for 15 min under shaded conditions as it is. Next, add 15 ml of 1 mol/L sulfuric acid solution, titrate free iodine immediately by using 0.1 mol/L sodium thiosulfate solution. After the colour of the solution has become pale yellow, add 1 ml of starch solution as an indicator, and furthermore titrate it. Separately, carry out a blank test by using 20 ml of water, and obtain the concentration of formaldehyde according to the following formula.

$$C = 1.5 \times (V_0 - V) \times f \times 1\ 000/20$$

where, C : concentration of formaldehyde in formaldehyde standard stock solution (mg/L)

V : titration amount of 0.1 mol/L sodium thiosulfate solution in formaldehyde standard stock solution (ml)

V_0 : titration amount of 0.1 mol/L sodium thiosulfate solution in blank test (ml)

f : factor of 0.1 mol/L sodium thiosulfate solution

1.5 : quantity of formaldehyde corresponding to 1 ml of 0.1 mol/L sodium thiosulfate solution (mg)

g) **Formaldehyde standard solution** The solution shall be prepared in such a way that a proper amount of formaldehyde standard stock solution is taken into a 1 000 ml volumetric flask so as to contain 3 mg of formaldehyde in 1 000 ml of water, then water is added to the marked line.

h) **Acetylacetone-ammonium acetate solution** The solution shall be prepared in such a way that 150 g of ammonium acetate specified in **JIS K 8359** is dissolved in 800 ml of water, 3 ml of glacial acetic acid specified in **JIS K 8355** and 2 ml of acetylacetone specified in **JIS K 8027** are added to it and mixed thoroughly in the solution, then water is added to make it 1 000 ml. When the measurement cannot be carried out immediately, it may be stored in a dark and cool place of 0 °C to 10 °C for the period not exceeding three days after preparation.

7 Test specimens

7.1 Cutting off of test specimen

The test specimens shall be cut off from boards selected by a reasonable sampling plan taking into consideration any necessary conditions for inspection of the characteristics of the building boards such as avoiding the end parts.

The cutting-off of test specimens shall be according to clause **4** and clause **5** of **JIS A 1902-1**.

7.2 Dimensions and number of test specimens

The dimensions and number of test specimens shall be as follows.

a) The test specimen shall be 150 mm ± 1 mm in length and 50 mm ± 1 mm in width.

b) The number of test specimens shall be the amount which gives a total surface area, defined as the sum of the areas of the ends, sides and faces, as close as possible to 1 800 cm^2. Two sets above shall be prepared.

7.3 Conditioning

The conditioning shall be as follows.

a) The test specimens shall be conditioned under the standard condition at a temperature of 20 °C ± 2 °C and a relative humidity of (65 ± 5) % specified in **JIS Z 8703** until they reach the constant mass. The constant mass shall be considered to be reached when the results of two successive weighing operations, carried out at an interval of 24 h, do not differ by more than 0.1 % of the mass of test specimen.

   In addition, if one week has elapsed after starting of conditioning, it may be considered to have reached the constant mass.

b) **Conditioning method** Every test specimen shall be separated mutually by at least 25 mm and positioned so that all surfaces are freely exposed to air under the standard condition as shown in **a**). The test specimen with low formaldehyde emission level may absorb the formaldehyde in the surrounding environment possibly, therefore care shall be taken when conditioning.

8 Test method

8.1 Preparation of test apparatus

The preparation of test apparatus shall be as follows.

a) The desiccator and several crystallizing dishes (usually, three) shall be prepared, and respectively rinsed thoroughly with water and dried before testing.

b) 300 ml ± 1 ml of water shall be poured in each glass crystallizing dish and it shall be placed at the centre of the bottom of the desiccator.

c) The stainless steel wire net shall be placed over the glass crystallizing dish inside the desiccator as shown in figure 1, and the test supporting metal shall be placed on it as shown in figure 2.

d) More than one desiccator shall be allowed to stand still in the test place whose inside temperature has been maintained at 20 °C ± 0.5 °C.

8.2 Attaching of sample for measurement

The attaching of sample for measurement shall be as follows.

a) The specified number of conditioned test specimens shall be attached to the test specimen supporting metal.

For one desiccator, the test specimen shall not be attached.

b) The lid shall be put on the desiccator and the emission test shall be started.

8.3 Monitoring of test conditions

8.3.1 Temperature

By using the desiccator in which no test specimen is attached, the temperature inside the desiccator shall be measured continuously or at intervals not exceeding 15 min, and the temperature during the test period shall be recorded. Alternatively, the temperature may be measured by locating the thermocouple, etc. in the test environment adjacent to the desiccator.

8.3.2 Measurement for concentration of background formaldehyde (blank test)

The concentration of background formaldehyde shall be measured by using the desiccator with no test specimen attached. The concentration of background formaldehyde shall not exceed 0.05 mg/L.

8.4 Test duration

The duration required for one emission test shall be 24 h ± 5 min.

8.5 Sampling of test solution

The water in the glass crystallizing dish which has absorbed the formaldehyde shall be the test solution. After 24 h has elapsed, firstly this solution shall be thoroughly mixed. After a 100 ml Erlenmeyer flask with interchangeable ground joint is rinsed with this test solution, it shall be filled with this solution and sealed by using a glass ground stopper. If the concentration of formaldehyde in the test solution cannot be determined immediately, it may be stored at between 0 °C and 5 °C for a maximum of 30 h before measuring the test solution concerned.

8.6 Measurement for concentration of formaldehyde in test solution

The concentration of formaldehyde in the solution for quantitative test shall be measured by the acetylacetone molecular absorption spectrophotometry.

Take 25 ml of the test solution of **8.5** into an Erlenmeyer flask with interchangeable ground joint. Next, add 25 ml of acetylacetone-ammonium acetate solution and mix them lightly with the stopper on. Heat this Erlenmeyer flask with interchangeable ground joint in a water bath at 65 °C ± 2 °C for 10 min, and then allow this solution to stand under shaded conditions until it becomes room temperature. Take this solution into an absorption cell and measure the absorbance at 412 nm in wavelength against water as a control using a spectrophotometer.

Separately, the measurement shall be carried out on the background formaldehyde in the same way. When the maximum absorbance appears at other wavelength than 412 nm, all measurements including that for preparing the calibration curve may be carried out at this wavelength.

NOTE : When the concentration of formaldehyde exceeds the range of calibration curve, the measurement shall be carried out according to **8.6** using the test solution properly diluted and the concentration of formaldehyde in the diluted solution may be obtained.

8.7 Preparation of calibration curve

For preparation of the calibration curve, take 0 ml, 5 ml, 10 ml, 20 ml, 50 ml and 100 ml of formaldehyde standard solution using pipette, place each into a 100 ml volumetric flask respectively, and afterwards add water up to the marked line, and make it the formaldehyde solution for preparation of the calibration curve. Take an aliquot of 25 ml from the respective solutions for preparation of the calibration curve, carry out the operation of **8.6** and plot correlation between the quantity of formaldehyde (0 mg to 3 mg) and the absorbance. The slope (F) shall be obtained according to either graphical method or by calculation.

The preparation of the calibration curve shall be carried out once a month or more.

8.8 Calculation

The concentration of formaldehyde from the test specimen absorbed into the water in glass crystallizing dish inside the desiccator shall be calculated according to the following formula.

$$G = F \times (A_\mathrm{d} - A_\mathrm{b}) \times 1\,800 / A$$

where,

G : concentration of formaldehyde of test solution in desiccator containing test specimen (mg/L)

A_d : absorbance of test solution in desiccator containing test specimen

A_b : absorbance of test solution in desiccator for background

F : slope of calibration curve on formaldehyde standard solution (mg/L)

A : surface area of test specimen (cm^2)

The concentration of formaldehyde shall be calculated (mg/L) from two sets of test specimen respectively and rounded-off to one decimal place according to **JIS Z 8401**. In such a case, however, the test results of the two sets shall not deviate by more than 20 % from the mean value.

8.9 Expression of test result

The test result shall be expressed by the mean value of two sets of measurements obtained.

9 Report

The test report shall include the following information.

a) Type of board, its thickness (mm) and density (kg/m^3)

b) Cut-off location of test specimens (for example, illustration for the indication of the cut-off location from board)

c) Number of test specimens

d) Emitted quantity of formaldehyde (mean value of concentration of formaldehyde obtained in **8.9**) including the individual value of each measurement and the background value.

e) Date of test

f) Temperature and humidity at test place

g) Name of test body

h) Name of person in charge of testing

The following information shall be included in the test report in principle.

i) Name of manufacturer, place of manufacture, month and year or lot number of manufacture

j) Storage conditions up to inspection after manufacture, especially matters that affect greatly the emission of formaldehyde into air, that is, temperature, humidity, sealing condition of material, storage condition and the like.

k) Sampling method and date of sampling

l) Place 1) and conditions 2) of sampling of test specimens from factory or building, or collecting from building, furniture and so on.

m) Conditions of temperature, humidity and time for conditioning of test specimens

In the case of other test methods, all matters related to the test (preparation, temperature and the like)

Notes [1] For example, factory, etc. or the location such as ceilings, floors and walls in the case of the board used for construction.

[2] For example, moisture content, surface painting, finishing.

Bibliography

ISO 12460-4:2011 *Wood-based panels—Determination of formaldehyde release—Part 4: Desiccator method*

Annex A (informative)

Comparison table between previous and current editions of this Standard on technically significant revisions

Current edition (**JIS A 1460**:2015)		Previous edition (**JIS A 1460**:2001)		Reason for revision
Number and title of clause	Contents	Number and title of clause	Contents	
4.2 Common conditions b) Water	The water to be used in this Standard shall be that of A1 to A4 specified in **JIS K 0557** or ion-exchanged water or distilled water equivalent to A1 to A4 of **JIS K 0557** in quality.	4.2 Common conditions b) Water	The water to be used in this Standard shall be the water of A1 to A4 specified in **JIS K 0557**.	Responding to the demand of addition of water equivalent to A1 to A4 of **JIS K 0557** in quality based on the fact-finding survey, the committee has deliberated and accepted its addition.
5 Apparatus and instruments b) Spectrophotometer	The spectrophotometer shall be that capable of measuring the absorbance in the range of 410 nm to 415 nm in wavelength. NOTE : The cell whose optical path length is 50 mm or more should be used.	5 Apparatus and instruments b) Spectrophotometer	The spectrophotometer shall be able to measure absorbance in the range 410 nm to 415 nm.	Since the related **ISO** Standard refers to the optical path length, wording of the cell is added as NOTE by considering the actual status of test bodies.
5 Apparatus and instruments f) Glass crystallizing dish	The glass crystallizing dish which is filled with distilled water or ion-exchanged water shall be that of 120 mm in outside diameter, 115 mm ± 1 mm in inside diameter and 60 mm ± 2 mm in depth. Furthermore, the glass crystallizing dish with a pour spout at the edge is desirable.	5 Apparatus and instruments f) Glass crystallizing dish	The glass crystallizing dish to be used for holding distilled water or deionized water shall be 120 mm in outside diameter, 115 mm ± 1 mm in inside diameter, and 60 mm to 65 mm in depth with a pour spout at the edge.	The depth of glass crystallizing dish is made to conform to the related **ISO** Standard. The term “deionized water” is altered to “ion-exchanged water” according to **JIS K 0211**. For the pour spout at the edge, the expression “Furthermore, ... is desirable.” is used to make the use of glass crystallizing dish possible regardless of whether dish has pour spout or not.

Current edition (**JIS A 1460** : 2015)		Previous edition (**JIS A 1460** : 2001)		Reason for revision
Number and title of clause	Contents	Number and title of clause	Contents	
7.1 Cutting off of test specimen	The test specimens shall be cut off from boards selected by a reasonable sampling plan taking into consideration any necessary conditions for inspection of the characteristics of the building boards such as avoiding the end parts. The cutting-off of test specimens shall be according to clause **4** and clause **5** of **JIS A 1902-1**.	7.1 Cutting off of test specimen	The test pieces shall be cut off from boards selected by a reasonable sampling plan taking into consideration any necessary conditions for inspection of the characteristics of the building boards such as avoiding the end parts and the like.	Since the sampling time and storage are referred to in addition to the cut-off location of test specimens, clause **4** and clause **5** of **JIS A 1902-1** are quoted.
8.3 Monitoring of test conditions 8.3.1 Temperature	By using the desiccator in which no test specimen is attached, the temperature inside the desiccator shall be measured continuously or at intervals not exceeding 15 min, and the temperature during the test period shall be recorded. Alternatively, the temperature may be measured by locating the thermocouple, etc. in the test environment adjacent to the desiccator.	8.3 Monitoring of test conditions 8.3.1 Temperature	A desiccator with no test pieces attached shall be used. The temperature inside the desiccator shall be measured continuously or at intervals not exceeding 15 min, and the temperature during the test period shall be recorded. Remarks : Alternatively, the temperature may be measured by locating the thermocouple in the test environment adjacent to the desiccator.	According to **JIS Z 8301**, "Remarks" is incorporated into the main body of this Standard.
8.3 Monitoring of test conditions 8.3.2 Measurement for concentration of background formaldehyde (blank test)	The concentration of background formaldehyde shall be measured by using the desiccator with no test specimen attached. The concentration of background formaldehyde shall not exceed 0.05 mg/L.	8.3 Monitoring of test conditions 8.3.2 Measurement for concentration of background formaldehyde (Blank test)	The concentration of background formaldehyde shall be measured by using the desiccator with no test piece attached.	The wording of the maximum value (0.05 mg/L) of background is added because it is specified in the related **ISO** Standard.

Current edition (**JIS A 1460**:2015)		Previous edition (**JIS A 1460**:2001)		Reason for revision
Number and title of clause	Contents	Number and title of clause	Contents	
8.6 Measurement for concentration of formaldehyde in test solution	The concentration of formaldehyde in the solution for quantitative test shall be measured by acetylacetone molecular absorption spectrophotometry. Take 25 ml of the test solution of **8.5** into an Erlenmeyer flask with interchangeable ground joint. Next, add 25 ml of acetylacetone-ammonium acetate solution and mix them lightly with the stopper on. Heat this Erlenmeyer flask with interchangeable ground joint in a water bath at 65 °C ± 2 °C for 10 min, and then allow this solution to stand under shaded conditions until it becomes room temperature. Take this solution into an absorption cell and measure the absorbance at 412 nm of wavelength against water as a control using a spectrophotometer. Separately, the measurement shall be carried out on the background formaldehyde in the same way. When the maximum absorbance appears at other wavelength than 412 nm, all measurements including that for preparing calibration curve may be carried out at this wavelength. NOTE : When the concentration of formaldehyde exceeds the range of calibration curve, the measurement shall be carried out according to **8.6** using the test solution properly diluted and the concentration of formaldehyde in the diluted solution may be obtained.	8.6	The concentration of formaldehyde in the solution for quantitative test shall be measured by acetylacetone molecular absorption spectrophotometry. Pipette 25 ml of the test solution of **8.5** into an Erlenmeyer flask with interchangeable ground joint. Next, add 25 ml of acetylacetone-ammonium acetate solution and mix them lightly with the stopper on. Heat this Erlenmeyer flask with interchangeable ground joint in a water bath at 65 °C ± 2 °C for 10 min, and then allow this solution to stand under shaded conditions until it becomes room temperature. Take this solution into an absorption cell and measure the absorbance at 412 nm of wavelength against water as a control using a spectrophotometer. Separately, the measurement shall be carried out on the background formaldehyde in the same way. Remarks : When the maximum absorbance appears at other wavelengths than 412 nm, all measurements including that for preparing calibration curve may be carried out at this wavelength.	Since there was no clause title in the previous edition, the title is added. According to **JIS Z 8301**, “Remarks” is incorporated into the main body of this Standard. The measures against the case where the concentration of formaldehyde in the test solution exceeds the range of calibration curve is shown.

Current edition (**JIS A 1460** : 2015)		Previous edition (**JIS A 1460** : 2001)		Reason for revision
Number and title of clause	Contents	Number and title of clause	Contents	
8.7 Preparation of calibration curve	For preparation of the calibration curve, take 0 ml, 5 ml, 10 ml, 20 ml, 50 ml and 100 ml of formaldehyde standard solution using pipette, place each into a 100 ml volumetric flask respectively, and afterwards add water up to the marked line, and make it the formaldehyde solution for preparation of the calibration curve. Take an aliquot of 25 ml from the respective solutions for preparation of the calibration curve, carry out the operation of **8.6** and plot correlation between the quantity of formaldehyde (0 mg to 3 mg) and the absorbance. The slope (*F*) shall be obtained according to either graphical method or by calculation. The preparation of the calibration curve shall be carried out once a month or more.	8.7 Preparation of calibration curve	For preparation of the calibration curve, take 0 ml, 5 ml, 10 ml, 20 ml, 50 ml and 100 ml of formaldehyde standard solution using pipette, place each into a 100 ml volumetric flask respectively, and afterwards add water up to the marked line, and make it the formaldehyde solution for preparation of the calibration curve. Take an aliquot of 25 ml from the respective solutions for preparation of the calibration curve, carry out the operation of **8.6** and plot correlation between the quantity of formaldehyde (0 mg to 3 mg) and the absorbance. The slope (*F*) shall be obtained according to either graphical method or by calculation.	The wording of the frequency in the preparation of calibration curve is added because it is specified in the related **ISO** Standard.

Errata for JIS (English edition) are printed in *Standardization and Quality Control*, published monthly by the Japanese Standards Association, and also provided to subscribers of JIS (English edition) in *Monthly Information*.

Errata will be provided upon request, please contact:
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