

Australian/New Zealand Standard™

AS/NZS 4266.16

Reconstituted wood-based panels— Methods of test

Method 16: Formaldehyde emission—Desiccator method

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee TM-005, Reconstituted Timber Panel Products, to supersede AS/NZS 4266.16(Int):2001.

This Standard incorporates Amendment No. 1 (February 2006). The changes required by the Amendment are indicated in the text by a marginal bar and amendment number against the clause, note, table, figure or part thereof affected.

This Standard is equivalent to the industrial Standard harmonized between the wood panel industries in Australia, Japan and New Zealand, known as JANS 16.

METHOD

1 SCOPE

This Standard specifies a method for determining the quantity of formaldehyde emitted from particleboards and fibreboards.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS/NZS

4266 Reconstituted wood-based panels—Methods of test

4266.1 Method 1: Sampling, cutting, and conditioning of test pieces

4491 Timber—Glossary of terms in timber related Standards

3 DEFINITIONS

For the purpose of this Standard, the definitions in AS/NZS 4491 and AS/NZS 4266.1 apply.

4 PRINCIPLE

Emission of formaldehyde is determined by placing test pieces of known surface area in a desiccator, at a controlled temperature, and measuring the quantity of emitted formaldehyde absorbed in a specified volume of water during 24 h.

5 APPARATUS

5.1 Desiccator

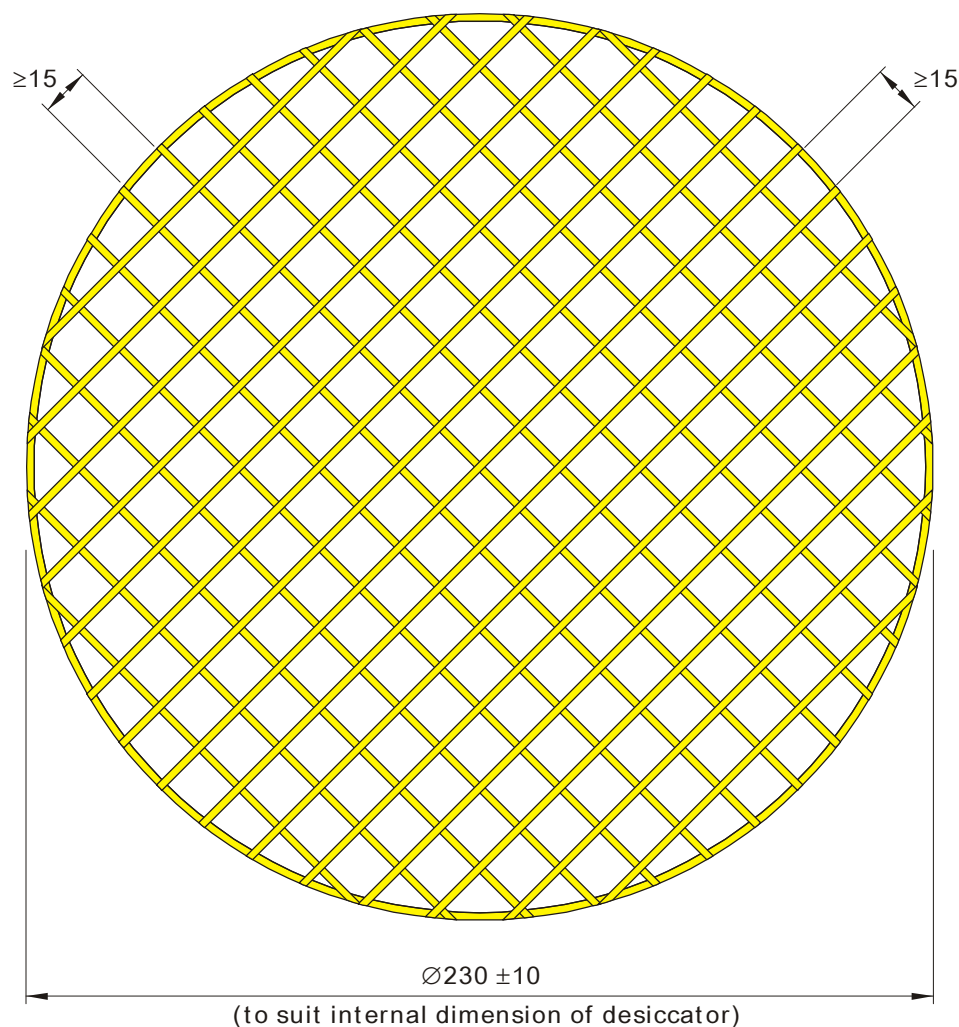
Glass desiccator, with an enclosed volume of 12 ± 2 L and fitted with a stainless steel wire grid or supporting platform of 230 ± 10 mm in diameter and of the type specified in Clause 5.3.

5.2 Glass crystallizing dish

Circular glass crystallizing dish, 115 ± 1 mm inside diameter and 60 ± 2 mm deep, and nominal size of 120×65 mm (based on external dimensions).

5.3 Wire grid

Wire grid or support, 230 ± 10 mm in diameter, made of stainless steel wire such that the distance between parallel pieces of wire is not less than 15 mm (see Figure 1).



DIMENSIONS IN MILLIMETRES

FIGURE 1 STAINLESS STEEL WIRE GRID FOR SUPPORTING THE TEST PIECES
IN THE DESICCATOR

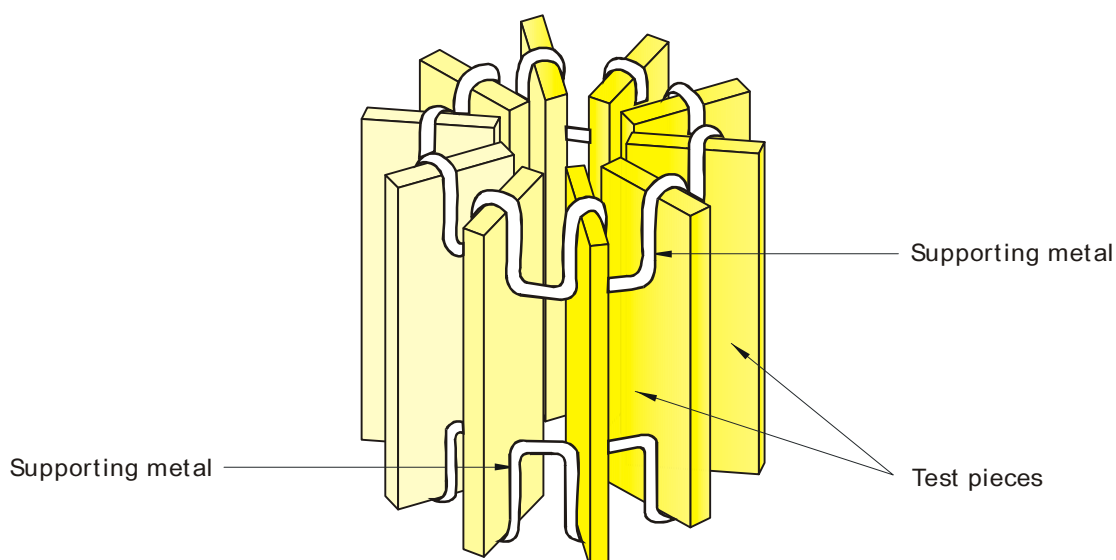


FIGURE 2 EXAMPLE OF WIRE SAMPLE HOLDER TO HOLD THE TEST PIECES IN THE DESICCATOR

5.4 Sample holder

Sample holder, made of stainless steel wire, to hold the test pieces upright in the desiccator (see Figure 2).

5.5 Temperature-measuring device

A thermocouple or other temperature measuring device, capable of measuring temperature with an error limit of $\pm 0.1^{\circ}\text{C}$, placed inside a desiccator of the type specified in Clause 5.1, which is located adjacent to the desiccator(s) containing the test pieces.

5.6 Spectrophotometer

Spectrophotometer, capable of measuring absorbance in the range 410 to 415 nm.

5.7 Water bath

Water bath, capable of maintaining a temperature of $65 \pm 2^{\circ}\text{C}$.

5.8 Volumetric flasks—100 mL

Six volumetric flasks, 100 mL, calibrated at 20°C .

5.9 Volumetric flasks—1000 mL

Two volumetric flasks, 1000 mL, calibrated at 20°C .

5.10 Bulb pipettes

Bulb pipettes, 5, 10, 15, 20, 25, 50 and 100 mL, calibrated at 20°C , or suitable auto pipette.

5.11 Micro-burette

Micro-burette or auto dispenser.

5.12 Flasks

Flasks, 100 mL, with stoppers.

5.13 Balance

Balance, scale interval 0.001 g.

6 REAGENTS

6.1 General

Reagents and water of recognized analytical purity shall be used for the analysis.

6.2 Acetylacetone-ammonium acetate solution

150 g ammonium acetate are dissolved in 800 mL distilled or de-ionized water. 3 mL glacial acetic acid and 2 mL acetyl-acetone (2, 4-pentanedione) are added and thoroughly mixed into the solution. Distilled or de-ionized water is added to make 1 L and the solution is stored so that it is protected from light. The solution shall be discarded after three days and a fresh solution made.

7 TEST PIECE

7.1 Sampling

Sampling and cutting of the test pieces shall be carried out in accordance with AS/NZS 4266.1.

7.2 Dimensions

The test pieces shall be 150 ± 1.0 mm in length and 50 ± 1.0 mm in width.

7.3 Number of test pieces

The number of test pieces shall be that which gives a total surface area, defined as the sum of the areas of the ends, sides and faces, as close as possible to 1800 cm^2 .

7.4 Number of emission tests

The emissions tests shall be carried out in duplicate.

NOTE: For internal routine control, a single emission test may be sufficient.

The difference between emissions of the two tests shall be within 20% of their average; otherwise a third emission test shall be carried out.

7.5 Conditioning

The test pieces shall be conditioned in accordance with AS/NZS 4266.1 or for 7 days.

The test pieces to be conditioned shall be separated by at least 25 mm and positioned so that free circulation of air occurs over all surfaces.

NOTE: Test pieces containing low levels of formaldehyde will absorb formaldehyde from the atmosphere when background levels of formaldehyde are high. Care should be taken to avoid such conditions during storage and conditioning by the use of a formaldehyde removal system or by maintaining low volumes of test pieces in the room. The background level is measured when a glass-crystallizing dish (Clause 5.3) containing 300 mL of distilled water is exposed to the conditioning atmosphere for 24 h, and the resulting solution is analysed. The maximum background level should be less than the nominal emission level of the test pieces (e.g., for test pieces from a sample with intended emissions of 0.3 mg/L, the background levels should be less than 0.3 mg/L). The background level of formaldehyde in the conditioning atmosphere may be reduced by increasing the rate of incoming formaldehyde-free air or by the use of carbon filters. The use of scavengers in the conditioning atmosphere is not allowed since exposing the test specimens to these chemicals could affect the rate of formaldehyde emission.

8 PROCEDURE

8.1 Desiccator preparation

8.1.1 New desiccators

Thoroughly clean new desiccators and any desiccators that have been used for purposes other than for the determination of formaldehyde.