



# MALAYSIAN STANDARD

MS 1787-13:2022

## Wood-based panels – Part 13: Determination of screw holding ability (First revision)

ICS: 79.060

Descriptors: wood-based panels, determination, screw holding

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## **MS 1787-13:2022**

### **Committee representation**

The National Standards Committee on Timber, Timber Products and Timber Structures (NSC 22) under whose authority this Malaysian Standard was adopted, comprises representatives from the following organisations:

Construction Industry Development Board Malaysia  
Department of Standards Malaysia (Secretariat)  
Forest Research Institute Malaysia  
Jabatan Kerajaan Tempatan  
Jabatan Kerja Raya Malaysia  
Malaysian MDF Manufacturers Association  
Malaysian Panel-Products Manufacturers' Association  
Malaysian Timber Council  
Malaysian Timber Industry Board  
Malaysian Wood Industries Association  
Malaysian Wood Moulding & Joinery Council  
Malaysian Wood Preserving Association  
Sabah Timber Industries Association  
Sarawak Timber Association  
Sarawak Timber Industry Development Corporation  
Timber Exporters' Association of Malaysia  
Universiti Putra Malaysia  
Universiti Teknologi MARA

The Technical Committee on Wood-based Panels (NSC 22/TC 3) which supervised the development of this Malaysian Standard consists of representatives from the following organisations:

Besgrade Products Sdn Bhd  
Construction Industry Development Board Malaysia  
Department of Standards Malaysia (Secretariat)  
Dongwha Malaysia Sdn Bhd  
Forest Research Institute Malaysia  
HeveaBoard Berhad  
Jabatan Kerja Raya Malaysia  
Jowat Manufacturing (SEA) Sdn Bhd  
Malaysian MDF Manufacturers Association  
Malaysian Panel-Products Manufacturers' Association  
Malaysian Timber Council  
Malaysian Timber Industry Board  
Perceptive Profile Sdn Bhd  
Profina Plywood Sdn Bhd  
Robin Resources (Malaysia) Sdn Bhd  
Sarawak Timber Industry Development Corporation  
Universiti Putra Malaysia  
Universiti Sains Malaysia  
Universiti Teknologi MARA

**Committee representation (*continued*)**

The Working Group on Screw Withdrawal (MS 1787-13) (NSC 22/TC 3/WG 6) which developed this Malaysian Standard consists of representatives from the following organisations:

Department of Standards Malaysia (Secretariat)  
Dongwha Malaysia  
HeveaBoard Berhad  
Forest Research Institute Malaysia  
Malaysian Timber Industry Board  
Universiti Teknologi MARA  
Universiti Tun Hussein Onn Malaysia

## MS 1787-13:2022

### Foreword

This Malaysian Standard was developed by the Working Group on Screw Withdrawal (NSC 22/TC 3/WG 6) under the authority of the National Standards Committee on Timber, Timber Products and Timber Structures (NSC 22).

This first revision of MS 1787-13:2022 cancels and replaces MS 1787: Part 13:2005, *Determination of screw holding ability*.

The changes in this revision are as follows:

- a) Clause 3 has been added;
- b) the thickness of panels has been mentioned in Clause 4; and
- c) 6.4.1 has been revised.

MS 1787 consists of the following parts, under the general title *Wood-based panels*:

Part 1: *Determination of dimensions of panels*

Part 2: *Sampling and cutting of test pieces*

Part 3: *Determination of dimensions of test pieces*

Part 4: *Determination of moisture content*

Part 5: *Determination of density*

Part 6: *Determination of swelling in thickness after immersion in water*

Part 7: *Determination of dimensional changes associated with changes in relative humidity*

Part 8: *Determination of moisture resistance under cyclic test conditions*

Part 9: *Determination of surface soundness*

Part 10: *Determination of modulus of elasticity in bending and of bending strength*

Part 11: *Determination of tensile strength perpendicular to the plane of the panel*

Part 12: *Determination of wet bending strength*

Part 13: *Determination of screw holding ability*

Part 14: *Determination of formaldehyde content by perforator method*

Part 15: *Determination of formaldehyde emission by desiccator method*

This Malaysian Standard will be used in reference to fibreboard, particleboard and oriented strand board, but does not include plywood.

Compliance with a Malaysian Standard does not of itself confer immunity from legal obligations.

**Wood-based panels – Part 13:  
Determination of screw holding ability  
(First revision)**

**1 Scope**

This Malaysian Standard specifies a method for the determination of the resistance of fibreboard and particleboard to axial withdrawal of screws.

**2 Normative references**

The following normative references are indispensable for the application of this standard. For dated references, only the edition cited applies. For undated references, the latest edition of the normative references (including any amendments) applies.

MS 1787- 2, *Wood-based panels - Part 2: Sampling and cutting of test pieces*

ISO 1478, *Tapping screws thread*

**3 Terms and definitions**

No terms and definitions are listed in this document.

**4 Principle**

Face and edge withdrawal of screws are determined by measuring the force required to withdraw a defined screw from the test piece. Edge withdrawal is only determined on panels of 15 mm thickness or greater.

**5 Apparatus**

**5.1 Testing machine**

Testing machine, which shall be capable of applying an increasing axial load to the underside of the screw head through a suitable stirrup, whilst adequately restraining the test piece at the same time and measuring the maximum load to an accuracy of 1 %.

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### 5.2 Metal jig

For testing face withdrawal of screw of a panel less than 15 mm thickness, the use of a metal jig with a central boring, which restrains the test piece (see Figure 1), is recommended.

Dimensions in millimetres

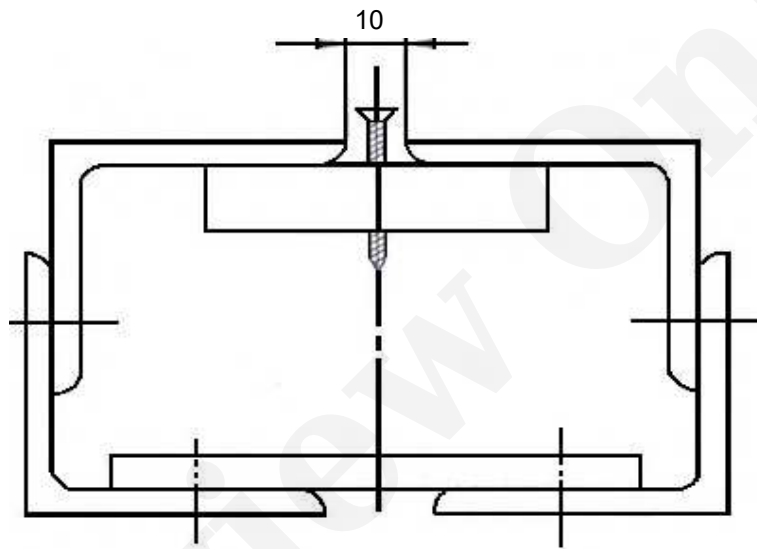


Figure 1. Metal jig for face withdrawal (less than 15 mm)

## 6 Test pieces

### 6.1 Sampling and cutting

Sampling and cutting of the test pieces shall be carried out in accordance with MS 1787-2. Sample for this testing can be taken from any available part of the panel during sampling as per MS 1787-2.

### 6.2 Dimensions

Test pieces shall be taken from each sample board. The test pieces shall be square with a side length of  $(75 \pm 1)$  mm.

### 6.3 Conditioning

The test pieces shall be conditioned to constant mass in an atmosphere with a relative humidity of  $(65 \pm 5)$  % and a temperature of  $(20 \pm 2)$  °C. Constant mass is considered