Australian/New Zealand Standard™

Reconstituted wood-based panels—Specifications

Part 3: Decorative overlaid wood panels

STANDARDS Australia

STANDARDS NEW ZEALAND
PAEREWA AOTEAROA

This Joint Australian/New Zealand Standard was prepared by Joint Technical Committee TM-011, Engineered Timber Products. It was approved on behalf of the Council of Standards Australia on 29 August 2017 and by the New Zealand Standards Approval Board on 6 September 2017.
This Standard was published on 27 October 2017.

The following are represented on Committee TM-011:

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This Standard was issued in draft form for comment as DR AS/NZS 1859.3:2016.

Australian/New Zealand Standard™

Reconstituted wood-based panels—Specifications

Part 3: Decorative overlaid wood panels

First published as AS/NZS 1859.3:1996.
Second edition 2005.
This edition 2017.

Jointly published by SAI Global Limited under licence from Standards Australia Limited, GPO Box 476, Sydney, NSW 2001 and by Standards New Zealand, PO Box 1473, Wellington 6140.

ISBN 978 1 76035 934 8

PREFACE

This Standard was prepared by the Joint Standards Australia/Standards New Zealand Committee TM-011, Engineered Timber Products, to supersede AS/NZS 1859.3:2005.

The objective of this Standard is to provide performance requirements and specifications for the manufacture and application of decorative overlaid wood panels. This Standard includes four types of decorative overlay applied to wood panel substrate.

This Standard is Part 3 of the AS/NZS 1859 series, dealing with reconstituted wood-based panel products, as follows:

AS/NZS	
1859	Reconstituted wood-based panels—Specifications
1859.1	Part 1: Particleboard
1859.2	Part 2: Dry process fibreboard
1859.3	Part 3: Decorative overlaid wood panels (this Standard)
1859.4	Part 4: Wet process fibreboard

The term ‘informative’ has been used in this Standard to define the application of the appendix to which it applies. An ‘informative’ appendix is only for information and guidance.

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SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies requirements for decorative overlaid wood panels. It includes four types of decorative overlay applied to wood panel substrate.

NOTES:

1 Appendix A lists information that should be supplied by the purchaser at the time of inquiry or order.

2 Appendix B describes recommended practices for the storage and handling of decorative overlaid wood panel.

3 Appendix C describes recommended practices for selection and application of screw fasteners.

1.2 APPLICATION

Decorative overlaid wood panels shall comply with Section 2 and the following sections, as applicable to type:

(a) Direct-surfaced with thermosetting resins (termed low pressure melamine) ..... Section 3.

(b) PVC film ..... Section 4.

(c) Paper foils ..... Section 5.

(d) Wood veneers ..... Section 6.

NOTE: This Standard is one of the series relating to particleboard and wet and dry process fibreboard. Decorative finishes may also apply to plywood (decorative wood veneers in particular) but this application is not covered by this Standard.

1.3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS/NZS	
1859	Reconstituted wood-based panels—Specifications
1859.1	Part 1: Particleboard
1859.2	Part 2: Dry process fibreboard
1859.4	Part 4: Wet process fibreboard
2924	High pressure decorative laminates—Sheets made from thermosetting resins
2924.1	Part 1: Classification and specifications
4266	Reconstituted wood-based panels—Methods of testing
4266.1	Part 1: Base panels
4266.2	Part 2: Decorative overlaid panels

1.4 DEFINITIONS

For the purpose of this Standard, the definitions below apply.

1.4.1 Layon

Sheet of material to be applied as an overlay.

1.4.2 Overtrim margin

The difference between the nominal dimensions of the sheet of particleboard or MDF and the actual dimensions.

1.4.3 Substrate

Base panel onto which lay-ons are applied.

1.5 CLASSIFICATION

Decorative overlaid wood panels shall be classified as follows:

(a) *Low pressure melamine (LPM)* Manufactured by directly applying partially uncured amyloplast resin impregnated papers to one or both faces of wood panel substrates and achieving bonding and curing in the same process using heat and pressure but without the use of an adhesive.

(b) *PVC film* Manufactured by roll laminating PVC film to one or both faces of wood panel substrates using an adhesive to bond the PVC film to the substrate.

(c) *Paper foils* Manufactured by laminating paper foils to one or both faces of wood panel substrates using an adhesive to bond the foil to the substrate.

(d) *Wood veneer* Manufactured by gluing wood veneers to both faces of wood panel substrates, using a suitable adhesive to match the performance of the substrate as specified in Section 6.

SECTION 2 GENERAL REQUIREMENTS

2.1 DIMENSIONAL TOLERANCES

When determined in accordance with AS/NZS 4266.1, the actual dimensions of substrate panels shall comply with the requirements of AS/NZS 1859, Parts 1, 2 and 4, as applicable.

NOTES:

1 Flatness requirements are only applicable to decorative overlaid panels at time of delivery from manufacturer. Numerous factors, including changes in temperature and relative humidity in storage and fabrication areas at building sites, may cause boards and panels to bow or twist irreversibly.

2 Care should be taken in specifying unbalanced overlaid panels, that is, panels laminated on one side only, or with significantly different overlays on each side. Supply of panels laminated on one side with PVC film, paper foils, or melamine should be agreed between buyer and supplier.

2.2 APPEARANCE

2.2.1 Defects

When inspected according to AS/NZS 4266.2, the surface layer of panels shall appear to be continuous. The following defects are permitted:

(a) *Spots, dirt and similar surface defects* The admissible size of such defects is based on a maximum area equivalent to 1.0 mm^2/m^2 of panel and is proportional to the panel size under inspection. The total admissible area of contamination may be concentrated in one spot or dispersed over an unlimited area of smaller defects provided Item (c) below is complied with.

(b) *Fibres, hairs, scratches* The admissible area of defects is based on a maximum contaminated length equivalent to 10 mm^2/m^2 of panel and is proportional to the panel size under inspection. The total admissible area of contamination may be concentrated in one spot or dispersed over an unlimited area of smaller defects provided Item (c) below is complied with.

(c) *Combination of surface defects* When defect types described in Items (a) and (b) above occur in the same panel, then the maximum level for each of the two types of defect shall not exceed half of the level prescribed in Items (a) and (b) above.

NOTE: These permitted surface defects are consistent with requirements for high pressure decorative laminate according to AS/NZS 2924.1.

2.2.2 Faults

Faults not permitted include faults showing through from the substrate to the surface and air bubbles, blisters, craters or faults in the decorative layer.

2.2.3 Imperfections

Imperfections and sawing defects are permitted within the overtrim margin.

2.2.4 Colour, pattern and surface finish

If colour, pattern and surface finish are assessed against other standards or customer colour samples, assessment shall be made under the same conditions specified in Clause 2.2.1.

2.3 SUBSTRATE

All substrates used to manufacture decorative overlaid wood panels should comply with the requirements in AS/NZS 1859.1, AS/NZS 1859.2 and AS/NZS 1859.4, as applicable.

Alternatively, validation of properties for decorative overlaid products shall be tested in their final shape and form.

2.4 MARKING

Decorative overlaid wood panels shall be marked according to classification in accordance with Clause 1.5, or the appropriate product name that would indicate the overlay classification.

Packs or individual panels of decorative overlaid wood panels shall have the following information legibly attached at least once:

(a) The manufacturer's name or registered mark.

(b) Reference to this Standard, i.e. AS/NZS 1859.3.

(c) Classification of overlay and type of substrate (i.e. MDF or particleboard) or brand name that would indicate the overlay classification and substrate type.

(d) Classification of substrate, that is, the word 'Standard (STD)', or the letters 'MR', as appropriate to the product.

(e) Identification of the face side on each sheet, where applicable.

NOTE: If relevant, the country of manufacture should be included in the marking label.

SECTION 3 LOW PRESSURE MELAMINE

3.1 SCOPE OF SECTION

This Section specifies limits of physical and mechanical properties of low pressure melamine (LPM) overlaid wood panels. Table 3.1 sets out the requirements covered by this Section.

3.2 RESISTANCE TO SURFACE ABRASION

When determined in accordance with AS/NZS 4266.2, the mean surface wear for solid colours shall be not less than 300 revolutions and, for printed patterns, not less than 40 revolutions.

3.3 POROSITY

When determined in accordance with AS/NZS 4266.2, the mean porosity rating shall be not greater than three.

3.4 STEAM RESISTANCE

When determined in accordance with AS/NZS 4266.2, the mean steam resistance rating shall be not greater than three.

3.5 CRACKING RESISTANCE

When determined in accordance with AS/NZS 4266.2, there shall be no visible cracks or micro cracks.

3.6 STAIN RESISTANCE

When determined in accordance with AS/NZS 4266.2, the stain resistance rating shall be not worse than two for any reagent.

TABLE 3.1

PROPERTY REQUIREMENTS FOR LOW PRESSURE MELAMINE OVERLAID WOOD PANELS

Property	Parameter examined	Test method AS/NZS 4266.2	Units	Requirements
Appearance	Appearance	Section 2	—	See Clause 2.2
Resistance to surface abrasion	Abrasion resistance	Section 3	Revolutions	Solid colour: ≥300
				Printed patterns: ≥40
Porosity	Appearance	Section 5	Rating	≤3
Steam resistance	Appearance	Section 6	Rating	≤3
Cracking resistance	Appearance	Section 7	—	No visible or micro cracks
Stain resistance	Appearance	Section 8	Rating	≤2

3.7 SUPPLEMENTARY TESTS

For certain applications, additional product testing may be required. If cure testing is requested, it shall be determined using one of the test methods listed in Table 3.2.

TABLE 3.2

PROPERTY REQUIREMENTS FOR CURE TESTING OVERLAID WOOD PANELS

Property	Parameter examined	Test method AS/NZS 4266.2	Units	Requirements
Resin cure Method 1	Appearance	Section 4	Rating	2 to 4
Resin cure Method 2	Scratching	Section 4	Load	Gloss finish ≥2 N Smooth finish ≥2 N Textured finish ≥4 N

SECTION 4 PVC FILM

4.1 SCOPE OF SECTION

This Section specifies limits of physical and mechanical properties of PVC film overlaid wood panels. Table 4.1 sets out the requirements covered by this Section.

4.2 GLUE SPREAD

Glue spread shall be continuous over the whole surface.

4.3 BOND STRENGTH

When determined in accordance with AS/NZS 4266.2, the mean peel force shall be not less than 25 N.

4.4 HEAT RESISTANCE

When determined in accordance with AS/NZS 4266.2, the mean shrinkage shall be not greater than 0.5 mm.

4.5 MOISTURE RESISTANCE

When determined in accordance with AS/NZS 4266.2, there shall be no visible reduction in water volume.

4.6 BOND DURABILITY

When determined in accordance with AS/NZS 4266.2, bond durability is considered satisfactory if, on visual examination, there is no separation of the vinyl from the substrate.

TABLE 4.1

PROPERTY REQUIREMENTS FOR PVC FILM OVERLAID WOOD PANELS

Property	Parameter examined	Test method AS/NZS 4266.2	Units	Requirements
Bond strength	Peel force	Section 9	N	≥25
Heat resistance	Shrinkage	Section 10	mm	≤0.5
Moisture resistance	Water volume	Section 11	—	No reduction
Bond durability	Visual	Section 14	—	Pass

SECTION 5 PAPER FOILS

5.1 SCOPE OF SECTION

This Section specifies limits of physical and mechanical properties of paper foil overlaid wood panels. Table 5.1 sets out the requirements covered by this Section.

5.2 GLUE SPREAD

Glue spread shall be continuous over the whole surface.

5.3 HEAT RESISTANCE

When determined in accordance with AS/NZS 4266.2, the mean shrinkage shall be not greater than 0.5 mm.

5.4 MOISTURE RESISTANCE

When determined in accordance with AS/NZS 4266.2, there shall be no visible reduction in water volume.

5.5 CROSSCUT

When tested in accordance with AS/NZS 4266.2, the percentage of pieces having paper foils removed shall be not greater than 10.

TABLE 5.1

PROPERTY REQUIREMENTS FOR PAPER FOIL OVERLAID WOOD PANELS

Property	Parameter examined	Test method AS/NZS 4266.2	Units	Requirements
Heat resistance	Shrinkage	Section 10	mm	≤0.5
Moisture resistance	Water volume	Section 11	—	No reduction
Crosscut	Paper foils removed	Section 12	Percentage	≤10

SECTION 6 WOOD VENEERS

6.1 GENERAL REQUIREMENTS

6.1.1 Veneer

The veneer shall comply with the following requirements (see Clause 6.1.3):

(a) Each piece of veneer leaf shall be of sound timber, smoothly and tightly cut to a uniform thickness. Veneer thickness shall be 0.5 mm to 0.7 mm or as agreed between purchaser and supplier.

NOTE: Eucalyptus species often have gum veins and pin holes as an acceptable feature.

(b) Veneer leaf moisture content shall be in the range of 6% to 12% prior to making up into lay-on and also prior to pressing onto the substrate.

(c) Veneer leaf shall be cut such that the long edges or edges parallel to the grain are parallel and clean cut. Leaf shall be edge butt joined by suitable means to form a lay-on of the required grain pattern and dimensions.

NOTE: A veneer lay-on is made up of a number of pieces of veneer leaf, suitably matched for figure and colour according to purchaser requirements.

6.1.2 Panel forms

Veneer panels may be manufactured in various forms based on veneer grades and end use requirements, as specified in Table 6.1.

TABLE 6.1

WOOD VENEER PANEL FORMS

Ordering code	Face veneer	Backing veneer
G1S/DGB	Face grade	Backing grade of same species but lower grade
G2S	Face grade	Face grade both sides of panel
BAMO	Face grade	Backing grade at manufacturer's option
G1S	Face grade	Grade and species nominated by the customer

LEGEND:
G1S/DGB = Good 1 side/Down grade back
G2S = Good 2 sides
BAMO = Backs at manufacturer's option

6.1.3 Face grade veneers

In addition to the requirements in Clause 6.1.1, face grade veneers shall exclude the following:

(a) Open joints.

(b) Overlapping joints.

(c) Splits.

(d) Non-natural discolouration.

(e) Any other faults detrimental to the finish and appearance of the surface.

NOTE: Natural cracks and holes are permitted in some exotic veneers and burls. These may require attention during finishing.

6.1.4 Backing grade veneers

Backing grade veneers may be of lower quality than face grade veneers. The following imperfections are permitted:

(a) Minor open joints, overlaps, knots, knotholes, splits and mismatching.

(b) Mild discolouration.

(c) Natural blemishes such as gum veins and knots.

(d) Other minor faults that do not impair the integrity of the veneer.

NOTE: Patching of open defects with a suitable filler of matching colour can be arranged subject to agreement between supplier and purchaser.

6.1.5 Adhesive

Adhesive used to bond the veneer to the substrate shall comply with the requirements of AS/NZS 4266.2 and with the bond durability requirements according to the substrate specified.

6.1.6 Construction

Veneered panels shall be constructed as follows:

(a) Veneered panels shall be balanced, that is, generally the same species and thickness of veneer shall be applied to both sides.

There may be occasions where purchasers' requirements call for differing species on the face and back. These cases shall be subject to consultation and agreement between purchaser and supplier.

(b) The grain of the veneer shall be generally parallel to the long edges of the panel. There will be exceptions to this according to purchasers' requirements, e.g. diagonal and cross grain panels. In these cases, grain direction should be the same on both sides where possible.

6.1.7 Finish

Where trimmed, edges shall be clean cut and square to the surface. Sanded finish shall be equivalent to 150 grit or higher.

NOTE: Unsanded and untrimmed veneer panels may be supplied subject to agreement between the purchaser and supplier.

6.2 GLUE SPREAD

Glue spread shall be continuous over the whole surface.

6.3 VENEER BOND STRENGTH

When determined in accordance with AS/NZS 4266.2, Veneer bond strength shall be considered satisfactory provided that—

(a) failure occurs in the veneer; or

(b) failure load exceeds requirements of Table 6.2.

6.4 VENEER BOND DURABILITY

When determined in accordance with AS/NZS 4266.2, Veneer bond durability is considered satisfactory if, on visual examination, there is no separation of the veneer from the substrate (see Table 6.2).

TABLE 6.2

PROPERTY REQUIREMENTS FOR WOOD VENEER PANELS

Property	Parameter examined	Test method AS/NZS 4266.2	Units	Requirements
Veneer bond strength	Visual and failure load	Section 13	—	Pass and 0.6 MPa
Veneer bond durability	Visual	Section 14	—	No separation

APPENDIX A

PURCHASING GUIDELINES

(Informative)

A1 GENERAL

Australian/New Zealand Standards are intended to include the technical provisions necessary for the supply of products referred to in the particular Standard, but do not purport to comprise all the necessary provisions of a contract. This Appendix contains advice and recommendations on the information to be supplied by the purchaser at the time of inquiry or order.

Its aims are to avoid misunderstanding, and to result in the purchaser receiving satisfactory products and service.

NOTE: Where particular applications require improved tolerance values to those specified in Clause 2.1, then in such cases the specifier or purchaser should advise the supplier of these requirements and negotiate appropriate arrangements.

A2 INFORMATION TO BE SUPPLIED BY THE PURCHASER

The following particulars should be supplied in the sequence given below:

(a) The substrate required (refer to AS/NZS 1859.1, AS/NZS 1859.2 and AS/NZS 1859.4, as applicable).

(b) The type of decorative overlay required:

  (i) LPM (see Section 3).

  (ii) PVC film (see Section 4).

  (iii) Paper foils (see Section 5).

  (iv) Wood veneers (see Section 6).

(c) Treatment required for the substrate, or performance of treated product (refer to AS/NZS 1859.1, AS/NZS 1859.2 and AS/NZS 1859.4, as applicable).

(d) The following dimensions of the sheet, in millimetres:

  (i) Thickness; and for flooring, the centre-to-centre spacing of supporting joists.

  (ii) Length.

  (iii) Width.

  (iv) For cut-to-size sheets, thickness and dimension details.

(e) Other special tolerances, if required.

(f) The number of sheets in each size.

(g) The place and time of delivery.

(h) Packing requirements, e.g. pack mass limits (for unloading purposes).

Additional information may be required when ordering wood veneer overlaid products:

(A) Name of veneer species.

(B) Type of cut, e.g. crown cut, quarter cut, rotary cut.

(C) Matching type, e.g. book match, slip match, random match.

APPENDIX B

STORAGE AND HANDLING OF DECORATIVE OVERLAID WOOD PANELS

(Informative)

B1 INTRODUCTION

Decorative overlaid wood panels require care in storage and handling. This Appendix makes recommendations on the storage and maintenance of panel material.

B2 RECOMMENDATIONS FOR STORAGE AND HANDLING

The following recommendations should be applied to maintain decorative overlaid wood panels in good order and condition:

(a) The storage area should be protected from sun, rain and wind to minimize rapid changes in temperature and humidity. Open-sided sheds should not be regarded as dry stores.

(b) All packs should be evenly supported at each end and at intervals of not more than 600 mm. Where packs are multiple stacked, all supports should be vertically aligned [see Figures B1(a) and B1(b)].

(c) Should it be necessary to store in the open, decorative overlaid wood panels should be covered with a waterproof sheet, supported on battens laid on top of the pack allowing air to circulate around and over the pack. The cover sheet should protect both sides and ends to floor level and be tied to prevent lifting [see Figure B1(c)].

(d) The stack should be kept dry and clear of the ground, and be placed so that it will not be exposed to mechanical damage.

(e) Where packs are supported on bearers manufactured from decorative overlaid wood panels, care should be taken to ensure that surface water does not make contact with the bearers. Added care may be taken by supporting each bearer on natural timber packing (or other impervious material). The minimum thickness of packing should be 38.0 mm.

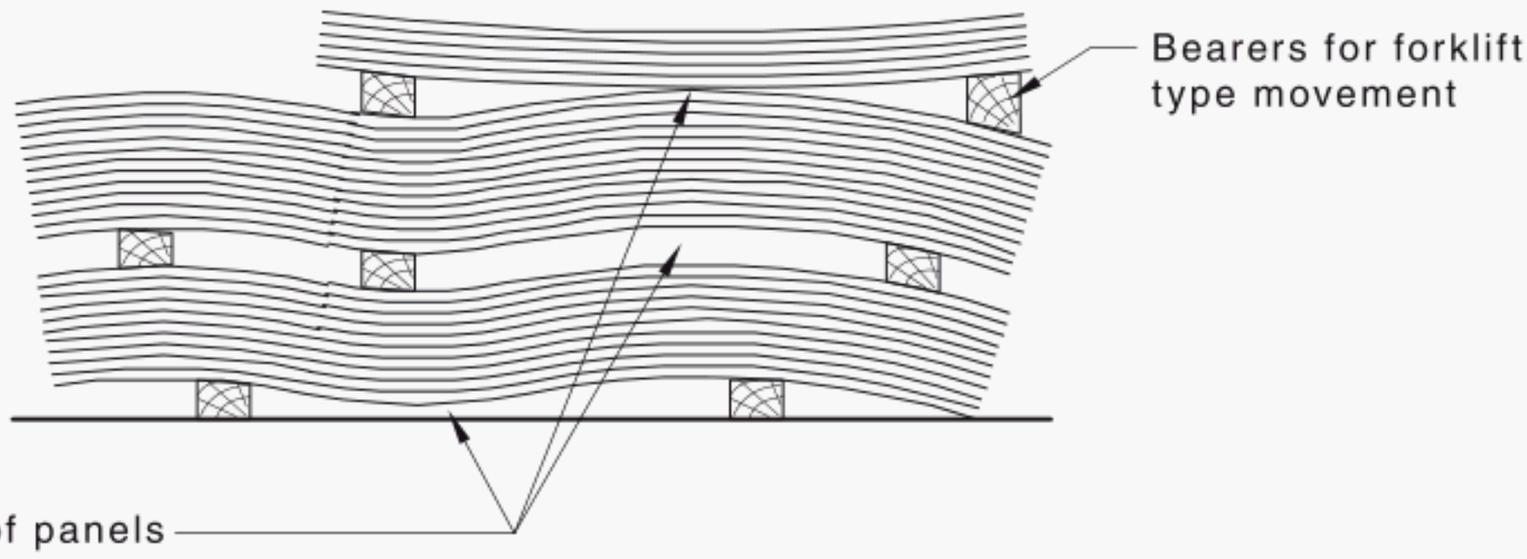
(f) To avoid staining and fading, the sheets should not be exposed to the weather while awaiting installation.

(g) The surface should be kept free of contaminants, e.g. dust, oil, and adhesives that will affect the overlaying of veneer, plastic laminate and other surface finishes.

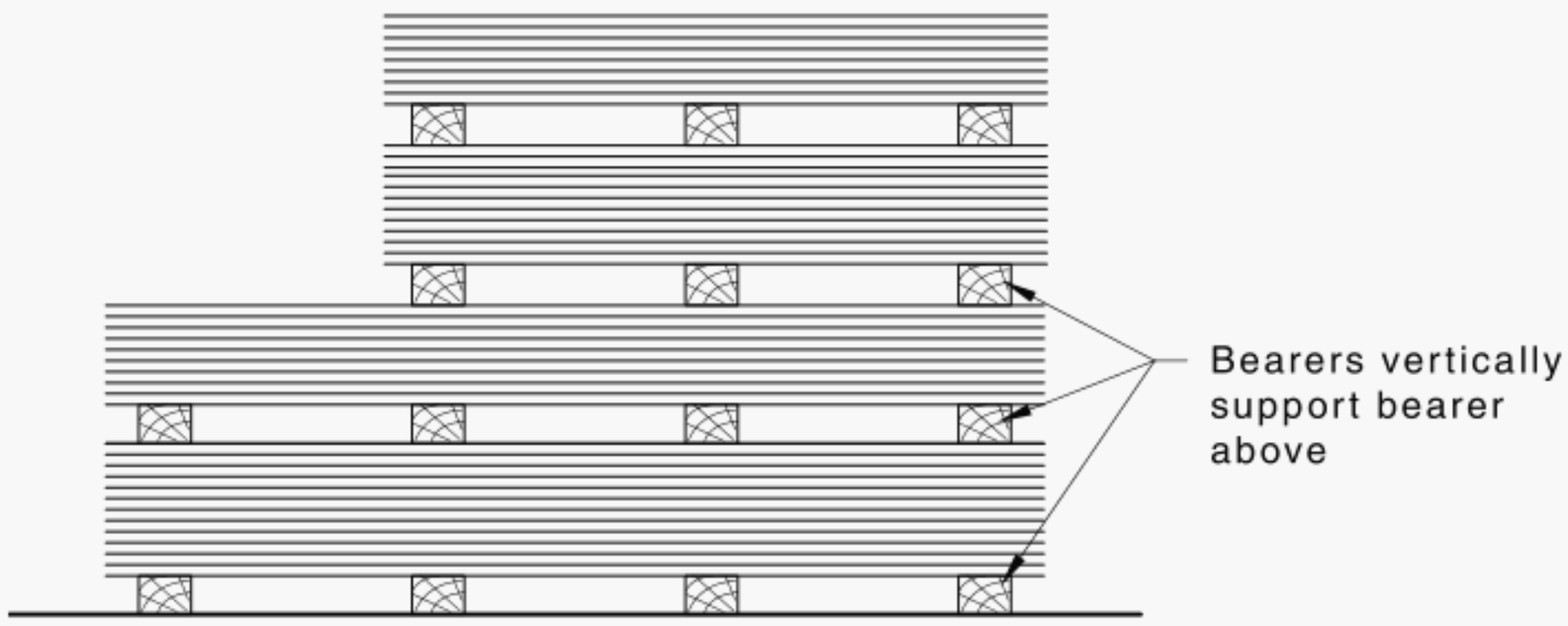
(h) Sheets should be installed in accordance with the manufacturer's instructions.

(i) Small quantities of formaldehyde may be emitted from decorative overlaid wood panel sheets. Under normal conditions, atmospheric concentrations of formaldehyde will be well below recommended safe levels. If large quantities of decorative overlaid wood panels are stored together there may be a risk of formaldehyde build-up. Provision for ventilation in storage areas should prevent formaldehyde build-up.

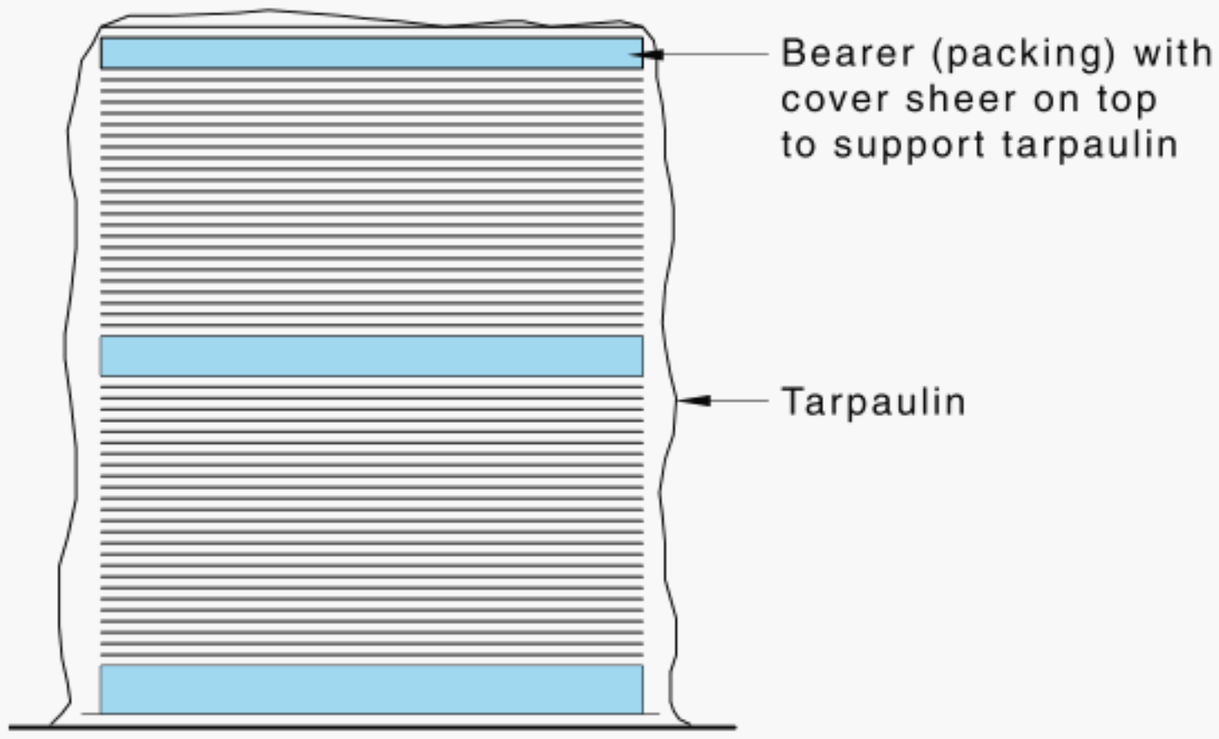
Material safety data sheets, available from decorative overlaid wood panel manufacturers, should be consulted for further information.



(a) Incorrect storage method



(b) Correct storage method



(c) Temporary cover (tarpaulin)

FIGURE B1 RECOMMENDED STORAGE AND HANDLING OF DECORATIVE OVERLAID WOOD PANELS

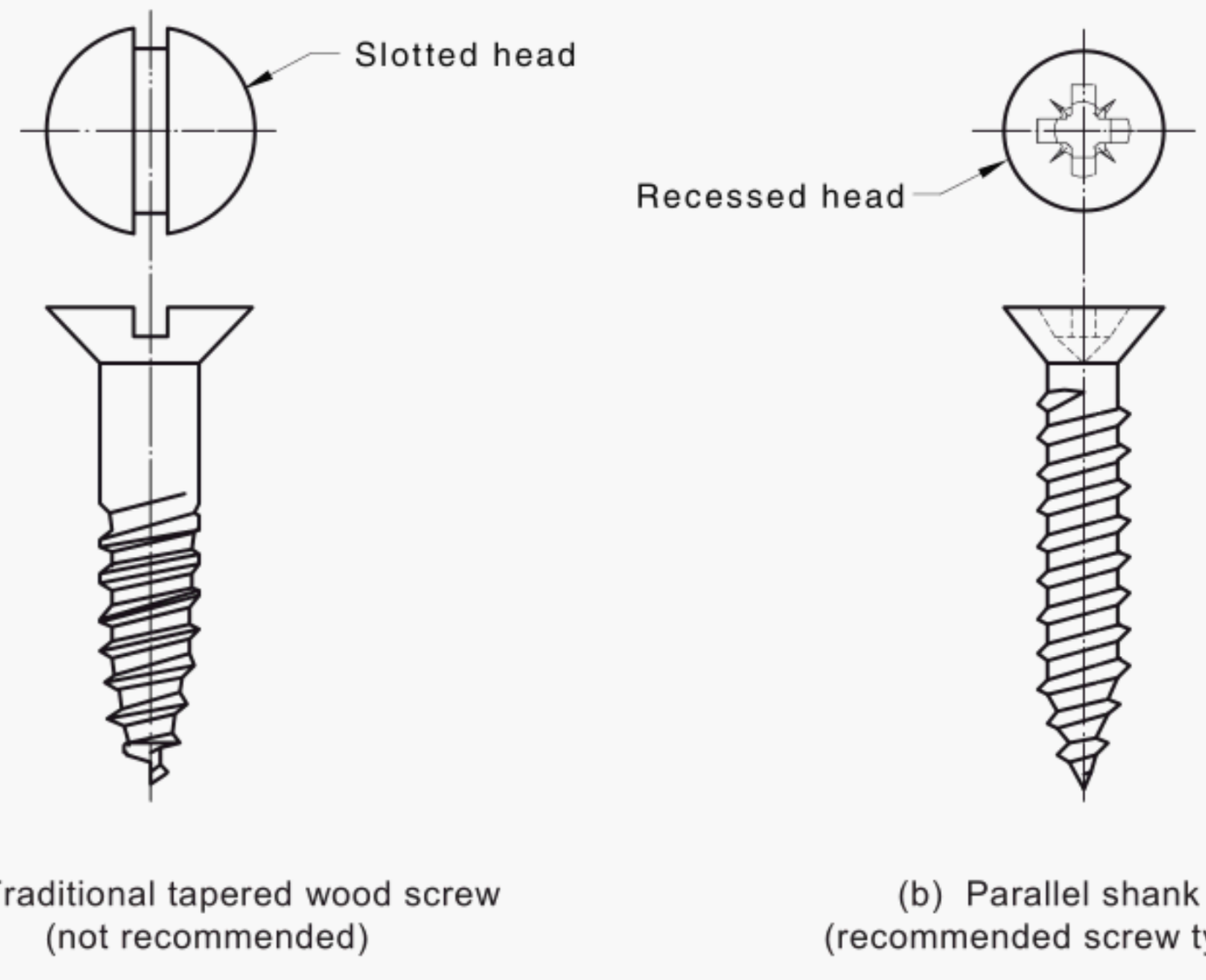
APPENDIX C
SELECTION AND APPLICATION OF SCREW FASTENERS
(Informative)

C1 INTRODUCTION

Because of the homogeneous nature of decorative overlaid wood panel, the selection of screw fasteners requires care as to type and application. This Appendix makes recommendations for the selection and use of screws in decorative overlaid wood panels. To reduce the possibility of staining and discolouration of veneer surfaces, fasteners should be corrosion resistant including high quality galvanizing, stainless steel or aluminium.

C2 TAPERED WOOD SCREWS

Traditional tapered wood screws are not recommended for use in decorative overlaid wood panels (see Figure C1). Taper and partial threading decreases the holding power of this fastener, especially when it is used on, or near to, edges, which may result in splitting and delamination between the surfaces.



(a) Traditional tapered wood screw (not recommended)

(b) Parallel shank (recommended screw type)

FIGURE C1 FASTENER TYPES USED IN WOOD PRODUCTS

C3 RECOMMENDED FASTENERS

The correct choice of fastener is most important for optimum screw holding power. Screws with parallel shank (core) and thread are superior and more desirable than tapered fasteners (see Figure C1).

NOTE: Screws with high overall thread diameter to core diameter have increased holding power over lesser diameter threads.

C4 FIXING METHOD

The technique of fixing screws into decorative overlaid wood panels is of importance, as an inferior technique may render the fittings (i.e. hinges, catches and other attachments) unserviceable.

When fitting items to decorative overlaid wood panels, consideration should be given to the following:

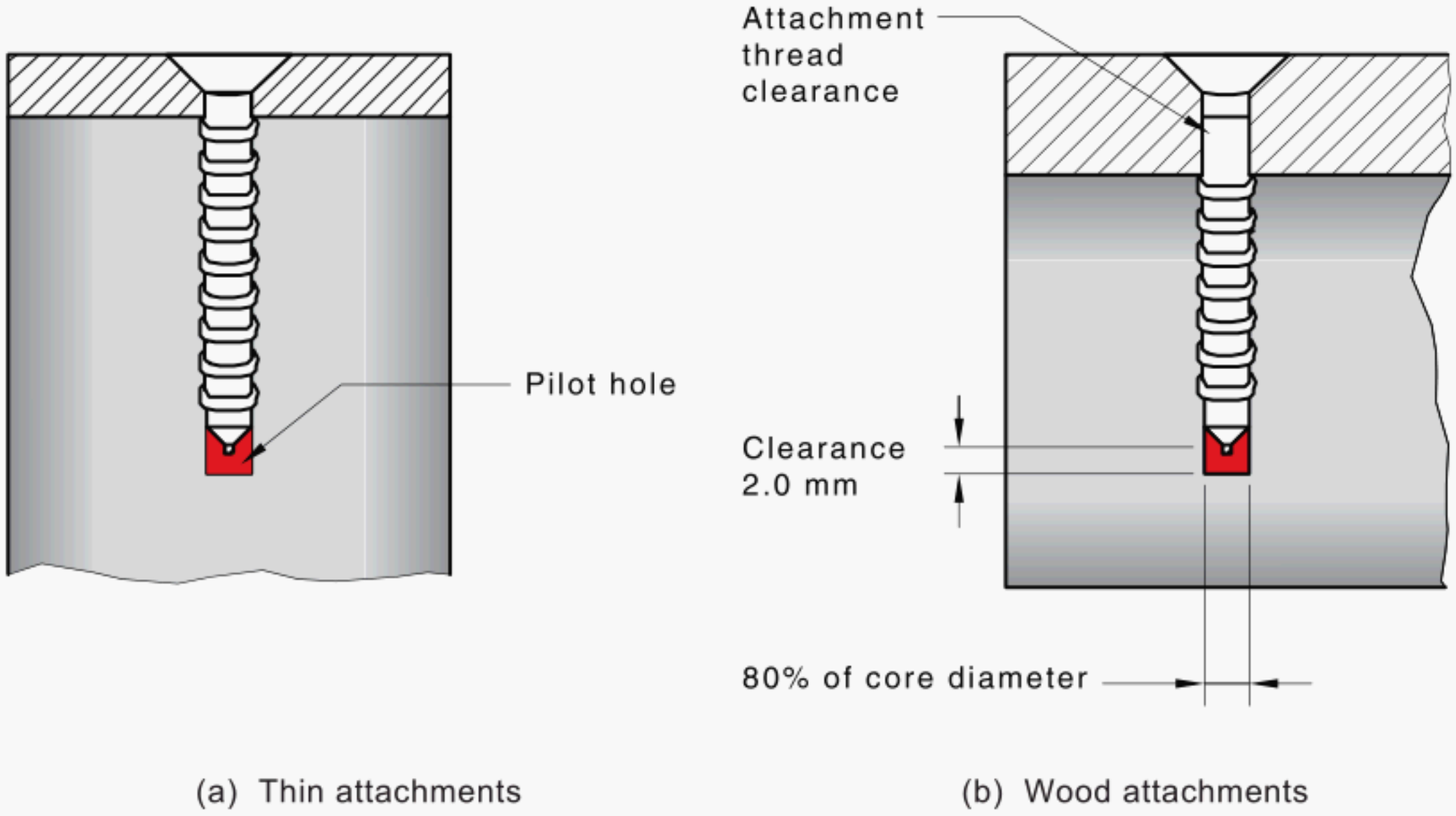
(a) *Screw driving* Fasteners should be screwed down firmly without over-tightening.

NOTE: Over-tightening crushes the decorative overlaid wood panel's structure and reduces screw-holding power.

(b) *Pilot holes* For parallel-threaded fasteners, pilot holes are recommended, and should be drilled out to approximately 80% of the core diameter and a minimum of 2.0 mm beyond the screw penetration depth, board thickness permitting (see Figure C2).

(c) *Fastener clearance* When attaching wood or other fixing to decorative overlaid wood panels, the screw fixing point clearance should be sufficient to prevent binding of the screw threads on the sides of the attachment. Figure C2 illustrates pilot hole depth and screw head clearance for thin and thick attachments.

(d) *Fastener heads* The two basic types of fastener heads used to fix items to decorative overlaid wood panels are slotted head and recessed head (see Figure C1). Recessed head fasteners are preferred to slotted head fasteners when positive driving action and resistance to slip are required.



(a) Thin attachments (b) Wood attachments

FIGURE C2 ATTACHMENT FIXING METHODS

NOTES

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ISBN 978 1 76035 934 8

Printed in Australia

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