

## 8. Exposure control and personal protective equipment

### Summary

Keep exposure to dust as low as practicable with the aim of maintaining airborne dust levels to below 1.0 mg/m<sup>3</sup> Time Weighted Average (TWA) measure as inspirable dust. All work with wood panel products must be carried out in such a way as to minimise exposure to dust. Under factory conditions machining, sawing, drilling, routing, laser cutting or sanding of the wood must be done with equipment fitted with local exhaust ventilation devices capable of removing dust and smoke at source. Work areas should be kept clean by regular vacuuming or wet sweeping.

### Ventilation

Local exhaust ventilation should be provided at areas of cutting to remove airborne dust. General dilution ventilation should be provided as necessary to keep airborne dust below the applicable exposure limits and guidelines. The need of ventilation systems should be evaluated by a professional industrial hygienist, while the design of specific ventilation systems should be conducted by a professional engineer. Use personal protective equipment as discussed above: Where possible, vacuum all equipment before repair/maintenance to remove excessive dust.

### Smoking:

Inhalation of airborne particles from other sources, including those from cigarette smoke, may increase the risk of lung disease. All storage and work areas should be smoke free zones and other airborne contaminants be kept to a minimum.

## 9. Physical and chemical properties

Boiling point, <sup>0</sup> C/ <sup>0</sup> F:	<b>Not applicable</b>
Evaporation Point (Butyl acetate =1)	<b>Not applicable</b>
Melting Point	<b>Not applicable</b>
pH	<b>Not applicable</b>
Saturation in Air (%)	<b>Not applicable</b>
Solids Content	<b>Not applicable</b>
Vapour Pressure, mm Hg at 25 <sup>0</sup> C:	<b>Not applicable</b>
Vapour Density (Air = 1)	<b>Not applicable</b>
Solubility in Water (%)	<b>Insoluble</b>
Specific Gravity (Water = 1)	<b>0.5-.85</b>
Viscosity	<b>Not applicable</b>
VOCs (g/l)	<b>Not applicable</b>
Volatile by Volume (%)	<b>Not applicable</b>
Flash Point, <sup>0</sup> C:	<b>Not applicable</b>
Flammability Limits %:	<b>Not applicable</b>
Auto ignition Temperature, <sup>0</sup> C:	<b>&gt; 220<sup>0</sup>C</b>

## 10. Stability and reactivity

This product is stable at normal temperatures and pressures

## 11. Toxicological and epidemiological data

Any health hazards associated with these products have been evaluated on the basis of the individual ingredients, and these hazards should be assumed to be additive. The hazards described in this document have been evaluated based on a threshold of 1.0% for all hazardous ingredients and 0.1% for all carcinogens.

## Acute Effects

The dust, which may be generated during manual or mechanical cutting, drilling, sanding or other abrading processes, and the smoke generated

by heating or laser cutting, may cause temporary irritation of the eyes and upper respiratory system. The symptoms are expected to subside after exposure has stopped and are not expected to cause any long-term effects.

Allergic skin and lung reactions have been reported with exposure to various wood panels dusts due to the chemicals presented in wood and cured resin. These rashes resemble other allergic skin reactions caused by plants, and usually heal rapidly.

## Chronic Effects

The risk of nasal cancer has been associated with wood dust exposure. In the 1960s, studies linking wood dust exposure in the furniture industry with nasal cancer were first reported in England. The link was confirmed in several other European countries and furniture industries. The studies showing a link to nasal cancer have been primarily conducted in industries using hardwood. The International Agency for Research on Cancer (IARC) evaluated dusts from both hardwood and softwood in 1995 and concluded that: "there is sufficient evidence in humans for the carcinogenicity of wood dust. There is inadequate evidence in experimental animals for the carcinogenicity of wood dust. Wood dust is carcinogenic to humans (Group 1)". The IARC also evaluated formaldehyde in 1995<sup>1</sup> and concluded that: "There is limited evidence in humans for the carcinogenicity of formaldehyde: there is sufficient evidence in experimental animals for the carcinogenicity of formaldehyde; and that overall formaldehyde is probably carcinogenic to humans (Group 2A)". The IARC again evaluated formaldehyde in June 2004<sup>2</sup> and concluded that: "there are adequate data available from humans for an increased risk of nasopharyngeal cancer" and that formaldehyde should now be classified as Group 1, carcinogenic to humans. Whilst this wood panel product contains less than 0.01% free formaldehyde, people using the product may be exposed to low concentrations of formaldehyde if the boards are heated (as in laminating), are cut by laser cutting machines, and/or if dust particles come in contact with the moist mucous membranes lining the upper respiratory tract. Extensive literature searches and research carried out by independent occupational and environmental health specialists has not indicated any risks over and above those associated with wood dust without binder. This research includes the 1999 formaldehyde risk assessment carried out by US scientists in collaboration with the US EPA and Health Canada. The risk assessment concludes that if a non-smoking worker were exposed to 0.004 ppm of formaldehyde continuously for 80 years and also to 0.1 ppm for 40 years at work then the predicted additional risk of respiratory tract cancer would be 4.1 per 1,000,000,000. The controls needed for minimising the potential for formaldehyde exposure from this product will be the same as those for control of dust exposures. These risk assessments and conclusions are in no way altered by the reclassification of formaldehyde to Group 1 by the IARC.

### References:

- <sup>1</sup> IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Volume 62: Wood dust and formaldehyde. IARC, Lyon, France. 1995.
- <sup>2</sup> IARC Press Release No. 153, 15 June 2004. IARC, Lyon, France.

## 12. Ecological Information

This product should be used only for its designated purposes.

## 13. Disposal

Summary: This product is not regulated as a hazardous waste by Australian environmental authorities. Local authority guidelines should be followed in the disposal of waste products and dust. **Burning must not be used as a means of disposal unless local authority and EPA approvals have been obtained.**

## 14. Transport information

This product is not regulated as a dangerous good. No special transport requirements are necessary.

## 15. Regulatory Information

D & R Henderson has assessed this product in accordance with the criteria of the National Occupational Health and Safety Commission: NOHSC: 1008(1999) and NOHSC:10005(1999), and the assessment is that occupational exposure to dust, smoke or fume from this product is hazardous according to the criteria of the NOHSC. No special State or Commonwealth regulations apply. The product is not listed in the Standard for the Uniform Scheduling of Drugs and Poisons.

Wood dust - (certain hardwoods such as beech and oak), and Wood dust - softwood are listed in the 1999 NOHSC list of Designated Hazardous Substances: NOHSC: 10005(1999). Formaldehyde - is listed in the 1999 NOHSC list of Designated Hazardous Substances: NOHSC: 10005(1999) if present in concentrations of 0.2% or more (this wood panel product contains <0.01% formaldehyde).

## 16. Other information

Contact Point: Technical sales office-  
D&R Henderson Pty Ltd  
P.O Box 199, Windsor NSW 2756  
Tel: 1300 733 266

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**IMPORTANT NOTICE:** This Material Safety Data Sheet (MSDS) is issued by D&R Henderson in accordance with National Occupational Health and Safety Commission (NOHSC) Guidelines. No information on this MSDS shall be altered. A new MSDS will be issued as per product specifications and/or NOHSC guidelines / regulations.

No responsibility will be taken for any changes made to its MSDS in content by any other person.

Revision Date: 28/03/08

# Floorboard

ORANGE · BURGUNDY · NAVY

D&R Henderson have been manufacturing all purpose tongue and grooved particleboard flooring since 1987. Unlike many particleboards, Floorboard products have a wax solution incorporated into the resin mix, allowing for greater edge protection if sheets are cut.

Floorboard meets all the requirements of the Australian standard AS/NZS 1860.1 and is suitable for domestic and commercial installations. There are a number of thicknesses available to cover your building requirements:

Orange Tongue – 19mm for 450mm joists

Burgundy Tongue – 22mm for 600mm joists

Navy Tongue – 25mm for 450mm joists\*

\*Dependant on nature of use and floor loading.

## Floorboard Product Range

### Orange Tongue (19mm)

A high quality interior all purpose flooring for use in domestic and some commercial buildings, designed for both platform and fitted flooring construction methods. Also available as Termite Treated.

### Burgundy Tongue (22mm)

As above for Orange tongue but is 22mm thick to allow for maximum joist centre span of 600mm. Also available as Termite Treated.

### Navy Tongue (25mm)

A heavy duty 25mm thick floorboard specifically for residential, commercial, industrial and institutional buildings that are subject to increased floor loads. Refer to Australian Standards for floor loading details. (In some circumstances alternative fixing methods to those in this publication may be necessary.)

### H2 Termite Treated Floorboard (19mm & 22mm)

As part of its range D&R Henderson also provide termite treated flooring which can be used in conjunction with other preventative measures to minimise termite attack. The board is impregnated with a synthetic pyrethrin during the manufacturing process which significantly improves its termite resistance properties. The registered brand is 272.20 H2 level.

### Site Storage

Although FLOORBOARD is resistant to moisture, packs must be protected from the weather until the particleboard is installed. Packs should be stored off the ground with supports about 600mm apart. Packs need to be protected on the top and sides with waterproof material such as plastic sheeting. (The covering should allow for air circulation during the storage period.)

### Effects of Moisture and Wetting

FLOORBOARD is a wood-based product and will react to changes in moisture and direct wetting by expanding or shrinking in the length and width and swelling or shrinking in the thickness. Under unduly wet conditions, the open groove will close significantly and will open when dry to perhaps a wider groove than the original cut-out. For optimum performance it is best to keep the FLOORBOARD as dry as possible. Once it is laid FLOORBOARD may be exposed to the weather for up to three months in compliance with the requirements of AS/NZS 1859.1 for particleboard flooring. If water ponding occurs then drain holes can be provided where needed by drilling holes of 3mm maximum in diameter with no less than 1m spacing between them.

FLOORBOARD, like other wood-based products and many other building materials, will respond to changes in relative humidity or the surrounding air. Board dimensions are closely related to moisture content. The ex-factory moisture content is about 8.5% with a usual range of ±1%. The highest potential

## Particleboard Flooring

for moisture movement exists when Particleboard Flooring is exposed to the weather as platform construction. Sheets which have been left exposed on a building site should be dried out before installation to avoid shrinkage gaps later.

### Sheet Layout and Nailing

Sheets are laid with the long length across floor joists with ends butted over a joist. Sheet end joists are staggered as shown in Diagram A. Set a string line at the ends of joists parallel to the perimeter of the building and at right angles to the joists.

Position the first sheet with its tongued edge to the string line. Ensure that information printed on the sheets is followed to give the correct top surface. The minimum docked sheet length must span at least 3 consecutive joists. See AS/NZS1860.2 Section 9.1.

# Installation Guidelines

**FIXING** – In accordance with Local Council and State Regulations – Minimum requirements as per AS/NZS1860.2 Section 10.

FLOORBOARD should be fixed with construction-grade adhesive and mechanical fasteners in accordance with the Adhesive Manufacturer's instructions. A bead of continuous adhesive should be applied from the cartridge applicator to joists before positioning FLOORBOARD sheets. The bead should be 5-6mm across and must not be laid too far ahead as it may cure quickly. The adhesive bead must not be allowed to dry and become hard on the surface. The open time available will depend on weather conditions which may restrict advance adhesive application to the amount required for one sheet only.

An extra bead along the tongue should be applied before sheets are pressed together which should ensure a squeak-free floor system and increased protection against weather elements once laid. Any excess glue squeezed out should be cleaned off. When sheets are cut on site, the cut edge should be sealed with adhesive.

**NAILING** – Select an appropriate nail for the thickness of FLOORBOARD being used. Nails should be spaced at 150mm centres along sheet ends and at 300mm centres over the rest of the sheet. Nails should not be placed closer than 25mm to the long (grooved) edges and 10mm to the short butt joined edges (refer to diagram A on opposite page).

Nails may be applied by hand or by nailing gun. With gun nailing care should be taken to adjust air pressure for softwood or hardwood joists, so that nails do not penetrate the surface by more than 1mm. Do not allow nails to pull the board to the top of the joists – the fixer should use his body weight to ensure that the underside of the sheet is in firm contact with the joist before firing the nail.

Use minimum 50 x 2.8mm galvanised nails for hardwood or Cypress pine joists and minimum 65mm x 2.8mm galvanised nails for softwood joists. Nails may have Bullet, Jolt, Flat or Countersunk heads. However, Bullet or Jolt head nails should be skewed to improve holding power. Nails should be driven flush initially and not punched until immediately prior to sanding. Power driven nails should be minimum 55mm x 2.5mm Tee Head or Finished Head for all timber joists. Use only galvanised or rust-resistant nails.

**METAL JOISTS** – Construction adhesive and extended point self-tapping screws (e.g. No 10 x 45mm CSK from W.A. Deuscher or similar) are recommended. Screw spacing is the same as specified for nailing. Use in accordance with manufacturer's instructions.

**CONSTRUCTION PLATFORM FLOORING** – Methods described generally apply to Platform Construction (refer to diagram B) or AS/NZS1860.2 Section 4 for further details. Although an exposure period of 3 months maximum is permitted, efforts should be made to protect FLOORBOARD from excessive exposure. Any ponded water should be swept off as soon as possible. Drain holes can be provided by drilling holes of 3mm maximum in diameter, at not less than 1m spacing, through the floor where water ponding occurs. Roof cover should be provided as soon as possible. Excessive and differential drying can be caused by the hot Australian sun. This may result in cupping which could, in extreme cases, cause nail pull-out or pullthrough of nail heads. In very severe cases, shading may be needed, or alternatively water should be sprayed onto the FLOORBOARD surface to recondition sheets back to uniform moisture content. In general, attempts should be made to keep the exposure time to a minimum. Damage may be caused by other tradesmen and attention is needed to avoid: · wet trades using the floor as a mixing table · excessive spillages of paint, plaster, concrete, etc. · stacking of heavy materials such as bricks, cement-bags, sand.

**FITTED FLOORING** – Fitted floors are those installed after internal walls are constructed and usually after the roof and wall claddings are fixed. Fixing is basically as described. An expansion gap of 10mm must be left around all walls, this gap will later be covered by skirting boards. (Refer to diagram C.)

**WET AREAS** – For use in wet areas fixing must be in accordance with local council and state regulations with minimum requirements as per AS/NZS3740. The board must be covered with an approved impervious membrane and flashing must be carried out in strict accordance to local and state regulations and in accordance with the membrane manufacturer's instructions. FLOORBOARD should be laid on seasoned gauged bearers and joists. A moulded shower base or prefabricated shower tray should be used. Under floor ventilation must comply with local council regulations.

**FINISHING** – Depending upon the degree and duration of platform exposure, it may be necessary to sand FLOORBOARD at the completion of construction to maintain a clean smooth surface. Sanding should be carried out in accordance with AS/NZS1860.2 Section 12.

**TILES (Ceramic, Slate, Quarry, Marble or similar)** – It is necessary for tiles to be laid onto a suitably prepared underlay surface to avoid cracking around the joints of the sheets of particleboard, which are a wood product and are subject to expansion and contraction as are all wood products used in construction. Typical underlays for general living areas, kitchens, hallways and entrance foyers, include fibre cement sheeting or flexible levelling compounds. It is important that the supplier's recommendations be followed in relation to the selection and application of primers, underlay, adhesives and ceramic floor tiles. Expansion joints should be provided between tiles at approximately five metre intervals and at the perimeter of large floors. Failure to follow this procedure could cause varying degrees of cracking in both the tiles and joints.

**SAFETY RECOMMENDATIONS** – The normal health and safety precautions should be taken when working with wood panel products. Machine tools should be fitted with dust extractors. If dust levels exceed the National Occupational Health & Safety Commission's Standards, the wearing of a dust mask (AS/NZS 1715 and AS/NZS 1716) and safety glasses (AS/NZS 1337) is recommended. Storage and work areas should be adequately ventilated. Material Safety Data Sheets for particleboard is available on request from any branch of D&R Henderson.

# Material Safety Data Sheet

## MATERIAL SAFETY DATA SHEET NO. 01

### 1. Identification

Product Name: Floorboard  
Other Names: Orange Tongue, Burgundy Tongue, Navy Tongue

### Head Office:

D & R Henderson Pty Ltd  
PO Box 199, Windsor NSW 2756  
Telephone: 1300 733 266  
www.drhenderson.com.au  
Revision Date: 28/03/08  
Uses: Flooring

**Appearance and Odour:** These products are manufactured as pressed boards ranging in thickness from 19mm to 25mm. They are made from wood particles/fibres which are bonded together with resin. Newly manufactured board and freshly cut surfaces may have a pine odour.

**STATEMENT OF HAZARDOUS NATURE:** In its intact state this product is not classified as a hazardous substance according to the criteria of NOHSC. Wood dust from this product is classified as a hazardous substance according to the criteria of NOHSC.

### 2. Composition and Ingredients

Chemical Entity	CAS No.	Proportion
Wood Particles or fibres from plantation softwood	None	> 85%
Phenol/melamine/urea formaldehyde resin	25212-25-3	< 11%
Paraffin wax	8002-74-2	< 2%
*Permethrin	52645-53-1	<.02%
*Ethylene Glycol Mono Butyl Ether	111-76-2	< 0.2%

Note: The ingredients are bonded together under heat and pressure. The process cures the resins but small amounts of formaldehyde from the resin may be released from the finished product. The finished product contains less than 0.01% free formaldehyde by weight.

Dust from this product contains:	Proportion
Soft Wood Dust	>85%
Cured binder	<15%

**Please note:** Keep exposures as low as practicable with the aim of keeping dust exposures below 1.0mg/m<sup>3</sup>. Potential exposure to dust will occur only when power tools or wood working machinery is used on the product such as planing, sawing, drilling or sanding or in poorly maintained workshop.

\* Permethrin and Ethylene Glycol Mono Butyl Ether are included in this product as an anti termite agent. Both are present in boards at a concentration of less

than 0.2% and as such do not alter any health and safety hazards associated with the manufacture of this product.

### 3. Hazard identification

#### Dust Hazard

Occupational exposure to wood dust from any timber product has been classified hazardous according to the criteria of the NOHSC. Inhalation of excessive amounts of dust may cause temporary upper respiratory irritation and / or congestion; and irritation of the eyes and skin. Repeated inhalation of wood dust increases the risk of nasal cancers and may increase the risk of lung fibrosis.

#### Formaldehyde

Formaldehyde gas may be released under some conditions particularly when the boards are heated and laminated or cut by laser cutting machines. However in well ventilated storage areas and workplaces, the concentration of formaldehyde is unlikely to exceed the World Health Organisation Standard of 0.1ppm for the general environment and it will be well below the NOHSC Occupational Exposure Standard of 1.0ppm. Wood dust may be produced from machining the product, and formaldehyde gas may be produced from heating processes.

#### Explosion Hazard

Wood dust may ignite at temperatures greater than 204°C/400°F and high concentrations in air (>60mg/m<sup>3</sup>) may spontaneously explode.

#### Potential Health Effects

##### Acute (Short term) Health Affects

**Swallowed:** Unlikely under normal conditions. Swallowing the dust may cause abdominal discomfort.

**Eye:** Wood dust and the resin may be irritating to the eyes resulting in redness and watering.

**Skin:** Skin contact with wood dust and the resin, may result in skin itching and redness and dermatitis in some people.

**Inhaled:** Inhalation of wood dust and the resin may be irritating to the nose, throat and lungs.

##### Chronic (long term) Health Effects

Repeated exposures over many years to uncontrolled dusts increase the risk of nasal cavity cancer. Inhalation of wood dust may also increase the risk of lung fibrosis (scarring). There are also increased risks of respiratory and skin sensitization from wood dust and resin in asthma and dermatitis respectively. Wood dust has been evaluated by the International Agency for Research on Cancer(IARC) as group 1, carcinogen to humans. Formaldehyde has been evaluated by the International Agency.

### 4. First aid measures

**Swallowed:** If dust is swallowed give water to drink. Seek medical attention if any abdominal discomfort.

**Eye:** Irrigate eye thoroughly with plenty of water for at least 15 minutes. If symptoms persist seek medical attention.

**Skin:** Wash thoroughly with mild soap and water. Remove clothing contaminated with dust.

**Inhaled:** Leave the dusty area. If irritation persists, seek immediate medical attention.

**First Aid Facilities:** Provide eye wash facilities.

**Advice to Doctor:** Treat symptomatically.

### 5. Fire fighting measures

Wood dusts may form explosive mixtures with air. Burning or smouldering boards or dusts and boards cut by laser cutting machine can generate:

- Carbon dioxide
  - Carbon monoxide
  - Oxides of nitrogen
  - Hydrogen cyanide
- Other pyrolysis products which are irritating to the respiratory tract.

Avoid breathing smoke from laser cutting machines and from burning or smouldering materials. Full protective clothing and self contained breathing apparatus should be worn for fire fighting. Extinguish fire with water, fog, foam, carbon dioxide or dry chemical.

**THE INTACT PRODUCT AND DUST MUST NOT BE BURNT IN BARBECUES, COMBUSTION STOVES OR OPEN FIRES IN THE HOME AS IRRITATING GASES ARE EMITTED.**

### 6. Accidental release measures

Spills and disposal: Off-cuts and general waste material should be placed in containers and disposed of at approved landfill sites or incinerated in accordance with local authority guidelines. Burning can not be used as a means of disposal without specific local authority and DECC approval.

### 7. Handling and storage

No special transport or storage requirements are considered necessary. The boards should be stored in well ventilated areas away from sources of heat, flames or sparks.

#### Eye:

Non-fogging dust resistant safety goggles or glasses conforming with Australian and New Zealand Standards AS/NZS 1336 Recommended practices for occupational eye protection should be worn if there is a risk of dust getting into the eye, such as when using power tools.

#### Skin:

Wear standard duty gloves conforming with Australian Standards AS 2161 Industrial safety gloves and mittens, loose comfortable clothing, and boots. Long-sleeved shirts and long trousers are recommended if skin itching occurs. Wash skin with mild soap and water after working with these products. Wash work clothes regularly and separately from other clothes.

#### Respiratory:

Avoid breathing dust. Wear a P1 or P2 particulate disposable or cartridge dust mask (respirator) conforming with Australian and New Zealand Standards AS/NZS 1715 Selection, use and maintenance of respiratory protective devices, and AS/NZS 1716 Respiratory protective devices when exposed to dust. These Standards should be followed in the selection fit, testing, use, storage and maintenance of the dust mask.

