LifePlus® Decking Specification – Explanatory Notes

[1] F17 in hardwood is preferred for weather exposed applications as timber graded to F17 generally includes a lesser number and size of natural characteristics, which can be a source of accelerated deterioration when exposed to the weather.

[2] AS 5604 – 2003 provides a classification of durability for different timber species for outside above ground and in-ground conditions with species invariably having an equal or higher classification (and hence longer expected life) outside above ground than in-ground.

- *Where the underside of the structure is greater than 400mm above the ground this should be considered an above-ground application and subframe timbers shall be: selected durability class 1 (outside above ground classification) structural hardwoods with sapwood treated to H3 (hazard level 3); or structural softwoods treated to H3.*
- *Where the underside of the structure is less than 400mm above the ground, this should be considered an in-ground application and subframe timbers, shall be selected termite resistant durability class 1 structural hardwoods (in ground contact classification) with sapwood treated to H5; or structural softwoods treated to H5.*

Posts extending into footings shall be selected durability class 1 hardwoods (*in ground contact* classification) with sapwood H5 treated or H5 treated round softwood posts.

The sapwood in round softwood posts provides an envelope of protection around the low durability heartwood. Exposed heartwood in sawn softwood posts, in contact with or embedded in the ground, may decay rapidly or suffer from termite attack, depending on moisture and temperature conditions. Note that “peeler cores”, the centres of softwood logs used for ply production, are primarily heartwood, cannot be treated and are unsuitable for external or structural use.

[3] Ideally, a single species shall be used, or mixed species with similar characteristics to ensure that similar shrinkage occurs in all the structural members.

High shrinkage species (tangential shrinkage greater than 10%) of unseasoned hardwood structural timber are sometimes supplied for the decking subframe. High shrinkage species are subject to collapse, distortion and excessive reduction in section size during on-site seasoning. High shrinkage and widely varying differential shrinkage between species, over time can result in unevenness in the decking surface, unsatisfactory appearance and even structural problems.

If using unseasoned hardwood, confirm that low shrinkage species will be supplied by your timber supplier.

[5] By orienting the bearers and joists so that the decking boards are laid in the same direction as the longest open face of the deck exposed to the weather and not as a large number of same length boards across the deck if a section of deck becomes weather damaged it will then only be necessary to replace some runs of boards rather than replace all the boards or cut and replace the damaged ends.

[6] The span tables for deck joists and deck bearers in AS 1684.2 - 1999, and in the LifePlus Decking Guide are only calculated on the basis of floor loadings and do not have any allowance for roof loadings. Deck joists and bearers are not to carry roof loads and any roof or pergola supports are to be directly above the deck supports.

[7] The use of wider joists (ie 50mm unseasoned hardwood, 42mm seasoned hardwood & 45mm softwood) allows fixings to be placed in a formal staggered alignment/pattern, thereby reducing the likelihood of split joists. Wider joists are also better for joining of decking boards over the joist as the fixings can be placed further from the end of the board, thereby reducing the likelihood of the fixing splitting the end of the board.

[8] Direct fixing of timber decking to metal joists with self drilling screws may result in a weakening and eventual failure of the screw in the long term due to the differential expansion and contraction of the timber decking and steel joist.

[9] Termite protection shall be provided in accordance with the requirements of the Building Code of Australia for both protection of your deck and to prevent termite access through or across your deck to any adjoining dwellings or structures. *Easy* means of access shall be provided to the underside of the deck for regular competent physical inspection for the presence of termites. Gaps incorporated for termite inspection between post on stirrups and concrete footing and separation between structures shall be minimum of 75mm. If evidence of termite activity is found, a licensed pest treatment professional shall be contacted to arrange urgent treatment.

[10] Retained humidity under the deck increases the risk of decking distortion, termite attack and accelerated decay.

[11] ***LifePlus® Decking*** **is a unique and improved hardwood timber decking which delivers longer life plus improved performance.** *LifePlus® Decking* incorporates a unique and improved profile and is manufactured from "selected hardwoods" - high quality, durability 1 (outside above ground classification to AS 5604-2003) treated hardwoods which deliver superior performance in weather exposed conditions. *LifePlus® Decking* is *not* produced from "mixed hardwoods", which can be supplied from a variety of hardwood species including some which are of lower durability, higher shrinkage and lower stability than we would consider acceptable.

LifePlus® Decking is available as:

> ***LifePlus® Natural Decking,*** **which has a natural textured finish** for situations where improved slip resistance is a consideration or where a more natural appearance is preferred, and
>
> ***LifePlus® Classic Decking,*** **which has a smooth dressed face** for situations where a traditional appearance is preferred and slip resistance is not a consideration.

[12] If decking is to be installed in areas of consistent *extreme* low humidity, eg in drier far western areas or in areas of consistent *extreme* high humidity, eg in rainforest areas, then decking with an appropriate moisture content shall be ordered, or standard decking acclimatised to the local EMC (equilibrium moisture content) by strip-stacking before installation.

If using decking with standard moisture, in areas of low or high humidity, make suitable allowance for the corresponding shrinkage or expansion which will occur.

[13] In weather exposed conditions, coastal areas or around pools, all fasteners and metal hardware, including connector nails shall be of stainless steel.

[14] Note the use of no-fines concrete which allows any water which collects during wet weather to drain away and the post to dry out during dry weather. Standard concrete can hold moisture around the post and cause accelerated deterioration. The holes for embedded posts shall have no-fines concrete at the base to provide a suitable bearing area which also allows water to drain away.

[15] In the case of a structure to be painted, particular care is to be given to the sealing of timber-to-timber interfaces *during construction.*

For pressure treated structural timber which is not to be later painted, a heavy bodied timber preservative such as CN Emulsion is an appropriate sealer. However, CN Emulsion will be noticeable as a darker coloured oily area around the joint. This darker coloured area may not be suitable for appearance and will stop paint adhering.

Alternatively, a liberal application of an oil-based primer/undercoat is a suitable sealer, coloured if required for appearance. An oil-based primer/undercoat is also suitable for sealing structural timber which is to be painted.

For detailed timberwork, such as handrail timbers or balustrading, any cut-ends, and the abutting surfaces shall be sealed during construction.

[16] It is good practice to seal the top of bearers before placing the joists and seal the tops of joists before fixing the decking to reduce water penetration and accelerated deterioration. Tops of bearers and joists can be sealed by applying:

- a heavy coat of CN Emulsion, or
- one coat of oil based primer plus one coat of paint finish.

For sealing the tops of joists, we strongly recommend using a waterproof membrane (such as Malthoid, a bituminous dampcourse), which forms a more effective seal and also reduces water entry around the fixing and sheds water from the joist.

Using *LifePlus® Decking* will result in less deterioration of the interface between the decking and joist, as the unique design provides increased ventilation which allows the surfaces to dry out.

[17] We recommend the use of timber, rather than threaded rod, for bracing, as timber braces provide a more rigid bracing effect and will not "sing" in windy conditions.

[18] If using a stain finish, be careful not to overload the surface and to brush out any excess stain.

[19] Raw linseed oil will encourage the growth of mould, which requires removal with commercial timber cleaning agents before recoating. Mould growth in raw linseed oil is particularly likely in warm humid conditions.

[20] Nails should not be used to create the space between decking boards as the nail point will penetrate, and reduce the benefit of sealing, the top of the joist by allowing moisture entry.

Small differences between the moisture content of the decking as supplied and the local Equilibrium Moisture Content (EMC) can be allowed for by applying a gap at the lower end of the range if the decking is likely to shrink, or at the upper end of the range if the decking is likely to swell. Confirm the moisture content by accurate measurement of the decking boards supplied.

[21] As described in [12] above, if decking is to be installed in areas of consistent *extreme* low humidity, eg in drier far western areas or in areas of consistent *extreme* high humidity, eg in rainforest areas, then decking with an appropriate moisture content shall be ordered, or standard decking acclimatised to the local EMC (equilibrium moisture content) by strip-stacking before installation.

[22] The slight backward undercut will assist in achieving a tight fit and will also reduce the potential for accelerated deterioration of the board ends by reducing trapped moisture and improving ventilation of the board ends. End grain absorbs moisture much more readily than face grain and absorption of moisture into the end grain is a major source of unsightly end cracking and accelerated deterioration over time.

[23] *LifePlus® Decking* used in light-duty commercial applications subject to medium volumes of foot traffic shall be fixed with twist shank nails or LifePlus Decking Screws as determined by the designer, with joists pre-drilled if necessary.

For commercial applications subject to high volumes of foot traffic use commercial standard decking and fixings.

[24] Decking fixings placed in a straight line are likely to split the joist. Split joists are likely to result in:

- a reduction or total loss of hold-down forces, allowing movement and distortion in the decking;
- nails "walking-out" of the deck as the decking moves under foot traffic;
- accelerated deterioration of the joist as water enters the split and is not able to dry out readily.

[25] Although 50x2.5 stainless steel domed head gun nails are readily available and commonly used for fixing decking, we recommend hand nailing with 50x2.8 twist shank nails for hardwood joists and 65x3.15 twist shank nails for softwood joists as they provide greater initial hold-down and have sufficient history of use to be confident of long term performance. Your nail supplier may be able to provide additional information on gun nails for decking and a recommendation as to suitability.

T-Nails (eg 50x2.2 Finishing Nails or 50x2.5 Flooring Nails) are unsuitable for fixing decking as the zinc plating may deteriorate rapidly and the shank diameter is insufficient to provide suitable hold-down, resulting in boards moving or 'rocking' and nails working up.

Plain steel or zinc plated nails are unsuitable for fixing decking or in any external application, as they are likely to rust, causing staining and gradual deterioration of the nail and the timber around it.

[26] The size of the pilot hole needed will vary between species, depending on hardness and the pilot hole may not need to be drilled full depth. It is important that the head of galvanised nails not be damaged as this may reduce the integrity of the sacrificial galvanised coating leading to premature rusting.

[27] "Punching" of bullet and domed head nails will leave a depression in which water can pool, accelerating deterioration.

"Punching" of domed head nails will severely damage the timber around the head of the nail.

[28] Vacuum pressure impregnation (VPI) treatment of *LifePlus® Decking* does not provide protection against the damaging effects of weathering.

Decking is particularly susceptible to weathering damage and particular care should be taken in its finishing and maintenance to ensure performance and longevity.

[29] The finish should be applied to a run of three to four adjacent boards along the full length of the deck, and not across the width. The gap between the boards can then be used to separate each run, so as to avoid an overlap of finish, which would result in a variation of colour density. Only apply as much finish as the timber will absorb. Do not load the applicator too heavily and push the finish well out along the timber. “Back brush” the coated area to push the finish into the surface. After allowing a short time for the finish to absorb, but while it is still wet, “dry brush” the coated area to even out any patchiness resulting from irregular application or variations in the rate of absorption into the timber. If more finish has been applied than the timber will absorb, brush any excess onto unpainted sections or remove by wiping with a soft cloth.

[30] Decking in weather-exposed conditions will require reapplication of the decking finish at shorter intervals than in protected conditions. In “average” conditions, you should expect protection for 9 to 12 months from oils and 12 to 18 months from stains. In severe conditions, such as around pools, recoating is likely to be necessary at shorter intervals. Although decking oils and stains require recoating at relatively short intervals, the recoating process is relatively simple and speedy. Finishes should be re-applied in the period before the most severe weathering conditions.

The colour of decking timber which has begun to turn a silver grey can be restored by the application of a coloured decking stain, which is best applied before a strong grey colour develops.

[31] Working practices, site organization and site access shall comply with Workplace Health and Safety Requirements.

Suitable safety equipment shall be worn when appropriate eg snug fitting work gloves, eye protection, ear protection and a dust mask. Particular attention shall be given to safe practices and the safety advice provided on the product or in the product manual when using ladders, grinders and power saws. Working from solid surfaces and maintain good control of any tool. Exercise care when lifting, carrying and twisting under load.

The work area shall be kept tidy, free of waste or excess materials which could be a tripping hazard. Building materials shall be stacked securely and access to the area by unauthorised persons, in particular unsupervised children, shall be prevented.

Treated off-cuts shall not be burned as this may create toxic vapours. Dispose of any treated off-cuts in landfill. Use normal hygiene practices in handling treated timber.

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