

Timber and timber-based flooring in wet areas

There has been some confusion about the requirements for timberbased flooring and floor structures under wet areas. Wet areas are spaces that contain sanitary fixtures or appliances, including laundries, bathrooms, kitchens and toilets.

This is guidance for designers and building consent authorities having difficulty interpreting New Zealand Standard NZS 3602: Timber and Wood Based Products for Use in Building regarding treatment of flooring in wet areas.

This information was confirmed as current in February 2016. It originally appeared in Codewords newsletters prior to January 2014.

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Of interest to Building consent authorities, Designers

NZS 3602

NZS 3602 is cited in the Acceptable Solution for Clause B2 Durability of the Building Code (B2/AS1). While NZS 3602 is deemed to comply with the Building Code, it lists minimum levels of treatment. Owners are at liberty to choose levels of treatment that are in excess of these limits if they wish. Particleboard is a popular choice for timber-based flooring in New Zealand. However, NZS 3602 identifies some wet area situations where treated timber is required and hence where it would be inappropriate to use particleboard. Clause 110.3.1 of NZS 3602 states:

Floor coverings in “wet areas” such as laundries, bathrooms, kitchens and toilets shall be as set out in E3/AS1. Where maintenance of an impervious coating cannot be assured in wet areas plywood or timber flooring that has been treated to a minimum of H3.1 shall be used.

Why is an impervious surface needed?

Wet areas may be subject to splashed or leaked water. Therefore, floors in these areas are expected to be exposed to regular, low levels of wetting in localised spots. Timber-based flooring is particularly susceptible to the effects of water and must be protected with an impervious surface. A floor surface that is impervious to water stops water penetrating or rotting the timber beneath. E3/AS1 is the Acceptable Solution for Clause E3 Internal Moisture of the Building Code. It lists six examples of impervious floor surfaces, including vinyl covering with sealed joints, tiles with waterproof grout and particleboard sealed with water-proof coatings.

What is assured maintenance?

The impervious surface must be maintained to ensure ongoing protection of the timber floor beneath. Maintenance may involve re-application of coatings or replacement of part or all of the system. Maintenance tasks are discussed in Paragraph 2.1 of B2/AS1, including re-coating protective finishes and replacing sealant in joints.

It is important that building consent applicants nominate the required maintenance for the impervious surface that they are proposing to use. ‘Assured’ maintenance in the context of Clause 110.3.1 of NZS 3602 is taken to mean that it is reasonable to expect that maintenance of the impervious surface will be carried out. It is not possible to confirm whether an individual will undertake maintenance, but it is possible to ensure the maintenance requirement is practical. If the maintenance requirement is practical, it can be expected that an individual would maintain the impervious surface.

If the maintenance requirement is not practical, it follows that the maintenance is unlikely to be carried out. Therefore, whether maintenance can be assured must relate to the practicality of carrying out the maintenance, not whether someone might have the inclination to do so.

Situations where the maintenance of the impervious surface cannot be assured include where the surface cannot be accessed to do the maintenance or where the maintenance requirement itself is unreasonable. Providing that it is accessible, most impervious floor surfaces in wet areas will have practical maintenance requirements. Accordingly, there should be no reason why a building consent authority cannot be 'assured' the maintenance will occur.

Wet area flooring

If water penetrates the impervious surface, preservative treatment will delay the decay of the timber. This delay allows time for the cause of the leak to be noticed and remedied before permanent damage is done. If there is doubt that the maintenance requirements of an impervious surface can be assured then the flooring beneath must be minimum H3.1 treated (such as H3 plywood) and not particleboard. Note that this refers to 'flooring' only, and not to the underlying floor framing. However, if the wet area contains a shower fixture, special consideration should be given to the flooring plus the framing.

Flooring and framing under showers

Flooring and framing under showers Where frequent water splash is present from a shower, there is a high risk of water entry. Access for inspection behind showers is difficult and water leaks may remain undetected. Clause B2 of the Building Code requires that building elements are durable depending on, among other things, ease of access and replacement. Flooring under a shower tray is moderately difficult to get to and replace and accordingly, Clause B2.3.1(b)(i) of the Building Code requires a minimum 15-year durability (note that this must be extended to a minimum 50-year durability where the flooring performs a structural function, such as where it is part of a structural diaphragm or where it is laid underneath the bottom plate).

In a comment on Clause 110.3.1, NZS 3602 recommends the following solution for flooring under showers:

Considerable undetected water damage to particleboard and surrounding wall floor framing can occur under baths used as a shower and under certain types of shower trays. It is recommended that H3 treated plywood be used under such fittings where maintenance cannot be assured. Adjoining timber framing and timber supporting these fittings should be treated.

The level of treatment for the timber framing is not mentioned and needs to be determined on a case-by-case basis depending on the risk involved. The risk must be assessed in terms of the likelihood of water entering below or behind the shower and remaining there long enough to cause damage.

Where there is a risk of water damage, treatment of the surrounding and supporting framing to H3.1 is likely to satisfy this requirement, but lesser levels of treatment may be appropriate in some circumstances. If it can be demonstrated that there is no risk of water damage then neither the flooring nor the framing would need to be treated. Note that the timber may need to be treated for other reasons, such as insect attack or ground atmosphere – refer to NZS 3602 for more information.

All guidance related to B2 Durability (<https://www.building.govt.nz/building-code-compliance/b-stability/b2-durability/>)

- with compliance with the Building Act, it is published under section 175 of the Building Act
- with a Weathertight Services claim, it is published under section 12 of the Weathertight Homes Resolution Services Act 2006.

