

Durability Statement

September 2009

This durability statement has been issued by Nelson Pine Industries Ltd, in support of the Laminated Veneer Lumber (LVL) products, manufactured at Nelson Pine's plant in Richmond, New Zealand. This statement shall be read subject to NelsonPine LVL being correctly specified, installed, used and maintained by suitably qualified persons. NelsonPine LVL is manufactured and branded in accordance with AS/NZS4357 Structural Laminated Veneer Lumber.

Durability

The durability of NelsonPine LVL is related to the durability of its two comprising components; the structural adhesive and the Radiata Pine veneers.

The dark brown Phenol Formaldehyde thermosetting adhesive that is used in the manufacture of NelsonPine LVL produces a Type A-bond. A Type A-bond is durable and permanent under conditions of full weather exposure, long term stress, and combinations of exposure and stress. When Phenol Formaldehyde is cured in the LVL manufacturing process under heat and pressure it forms a highly extended irreversible cross linked web of covalent bonds. It is this irreversible crosslinked nature of phenolics which gives them their hardness, good thermal stability and makes them impervious to most chemical attack and solvation. Formaldehyde-based resins have been well proven and documented as an adhesive in the wood industry for over 70 years. The adhesive bond is regularly sampled in the manufacturing process under the third party quality assurance program carried out by the Engineered Wood Products Association of Australasia (EWPAA).

The Radiata Pine veneers used in the manufacture of NelsonPine LVL may be treated or untreated depending on the level of durability required. NelsonPine LVL may be treated in accordance with AS/NZS1604.4 Specification for Preservative Treatment – Laminated Veneer Lumber. Generally where a treatment is required, LVL is treated with LOSP to H3 (equivalent to H3.1 as referenced in NZS3640) as per AS/NZS1604.4.

New Zealand Building Code

Durability is covered in the New Zealand Building code (NZBC) in section B2 – Durability and Section E2 – External moisture. The durability clause requires that materials, components and construction methods allow the building to function for its specified intended life of not less than 50 years for structural and inaccessible elements. An acceptable solution to the building code is referenced in B2/AS1 where the New Zealand standards NZS3604 and NZS3602 specify the level of treatment and the application respectively. Alternative solutions may be accepted by Territorial Authorities if the solution meets the durability requirements of the Building Code.

Internal use of LVL

In internal dry conditions where the equilibrium moisture content of wood will be below 20%, NelsonPine LVL may be used untreated to meet the NZBC requirements of 50 years of durability. In such a dry environment, the likelihood of attack from both insects and fungi are significantly reduced. Radiata Pine that has been heat treated and used dry is less likely to be attacked by New Zealand Borer and brown rot. Fungal growth which can lead to rot or decay in timber will not be able to germinate and develop unless there is a continual supply of moisture (>20% moisture content). NelsonPine LVL can withstand wetting during construction provided the product can return to equilibrium moisture content below 20% for the remainder of its service life. Where the appearance of the NelsonPine LVL is critical the LVL should be protected from wetting before construction as wetting can cause staining with discolouration and potentially the initially stages of mould growth. The surface veneers of NelsonPine LVL will respond quickly to cycles of wetting and drying to form surface cracks if exposed to the weather for extended periods. Painted, untreated NelsonPine LVL will tolerate occasional wetting, by shedding the water, in a dry environment as long as the paint coating is maintained. For internal applications where there is a risk of continual dampness it is recommended that NelsonPine LVL is treated to H3 LOSP.

External and at risk use of LVL

NelsonPine LVL may be used to meet the building code requirements of durability in excess of 50 years in external above ground applications where it is treated to H3 LOSP and is protected from the weather with a surface coating such as an acrylic paint system. Typical applications where this will apply are veranda beams and overhanging rafters. The H3 LOSP treatment only protects NelsonPine LVL from insect attack and decay. Other forms of deterioration such as moisture cycling, ultraviolet light and mechanical wear are minimised by the use of coatings and effective detailing. For areas where there is a potentially high level of atmospheric moisture such as subfloor beams H3 LOSP treatment is recommended. Where NelsonPine LVL is exposed to relative high humidity (greater than 80% humidity) for extended periods, such as roof beams over a swimming pool, it is also recommended that the beam be coated with a high quality moisture cured polyurethane or two component isocyanate polyurethane to inhibit moisture ingress in addition to H3 LOSP treatment. Refer to NZS3602 for further applications where LVL may be used when treated to H3 LOSP. NelsonPine LVL is relatively inert chemically and is therefore resistant to most acids, rust and other corrosive situations including hide curing complexes, fertilizer and swimming buildings, where acidity levels are between 2 -10 on the pH scale.

NelsonPine LVL should not be used in external applications where it is not protected from the weather and moisture. The life expectancy of untreated and unprotected NelsonPine LVL fully exposed to the weather and/or in contact with the ground is less than 5 years.