



**BRANZ
APPRAISAL
CERTIFICATE
No. 410 (2001)**

This Certificate replaces BRANZ Appraisal Certificate No. 410 (2000)

**OSMOSE®
NATUREWOOD™
ACQ TIMBER
PRESERVATIVE**

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Readers are advised to check that this Certificate has not been amended, withdrawn or superseded by a later issue. Refer to the "Valid Certificates Index" in BUILD magazine published by BRANZ, the Certificate Listing on the BRANZ Internet Site, or contact BRANZ.

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Product

- *This Certificate relates to Osmose® NatureWood™ ACQ (alkaline copper quaternary) Timber Preservative, which is a preservative for treating timber to provide long-term protection from attack by insects and decay.*
- *The product has been appraised for use as a preservative for the treatment of timber up to Hazard Class H5 as listed in MP 3640 (NZS 3640*) and AS 1640, when used by commercial treatment plants using vacuum/pressure treatment processes.*
*(*Note: MP 3640 is in the final stages of an update and will soon be released as NZS 3640).*
- *The product must be used in conjunction with Osmose® Treated Timber Guide, undated and in accordance with instructions printed on their container labels. Osmose® also provides onsite training at individual treatment plants for use of the product.*



Building Regulations

1. New Zealand Building Code (NZBC)

The NatureWood™ preservative is itself not within the scope of the NZBC, however, timber that has been treated with the product and used within buildings is a building element, or parts of a building element, and is covered by the NZBC. Therefore, Osmose® NatureWood™ ACQ Timber Preservative, if used in accordance with this Certificate, will contribute to meeting the following provisions of the NZBC:

CLAUSE B1 STRUCTURE: Performance B1.3.1, B1.3.2 and B1.3.4 for the relevant physical conditions of B1.3.3. See Section 7.

CLAUSE B2 DURABILITY: Performance B2.3.1(a) not less than 50 years; B2.3.1(b) 15 years; and B2.3.1(c) 5 years. See Section 8.

CLAUSE F2 HAZARDOUS BUILDING MATERIALS: Performance F2.3.1. See Section 11.

2. NZBC Acceptable Solutions

2.1 Durability requirements contained within the NZBC cover durability of building elements, and means of meeting these durability requirements are contained within NZBC Acceptable Solutions. Acceptable Solution B2/AS1 references NZS 3602:Part 1 as a

means of meeting the durability requirements for timber building elements, and NZS 3602 specifies timber treated and branded in accordance with MP 3640 is acceptable to meet durability requirements.

2.2 Timber treated with *NatureWood*TM preservative will meet the Hazard Class requirements of MP 3640 (NZS 3640), provided it is treated in accordance with the NZTPC (New Zealand Timber Preservation Council) Quality Manual.

Product Information

3. Description

*NatureWood*TM preservative is an alkaline copper quaternary fixed waterborne timber preservative of a clear, slightly viscous, royal blue liquid form. The active ingredients of the preservative are copper as CuO, and a quaternary ammonium compound in the form of a soluble solution. A wax emulsion is sometimes added to the preservative to act as a moisture barrier to the treated timber (*NatureWood*TM Plus *MoistureGuard*TM).

4. Handling and Storage

The preservative is supplied by bulk delivery, or in 1000 litre individual bulk containers. Handling and storage of the product must be as set out in the *Osmose*[®] NZ Material Safety Data Sheet (MSDS) dated February 2001. Labels that show similar information to the MSDS for handling and storage are attached to the 1000 litre containers. These labels also include directions for use of the product.

5. Safety Precautions

When handling or using the preservative, the procedures as set out in the *Osmose*[®] MSDS must be followed at all times. The preservative in its liquid form may cause burns to the skin and may damage the eyes if contact is made. It will be harmful if fumes are inhaled, and product vapours may cause irritation to the mucous membranes. Some of the main safety features when using the preservative in its liquid form are summarised as follows:

- Personal protection in the form of skin and eye protection must be used, as well as an approved respirator in accordance with AS/NZS 1715.
- The product must be used with adequate ventilation, with local exhausting required in confined spaces.
- The product must be stored and transported in accordance with its Dangerous Goods Class, Subsidiary Risk, Packaging Group, Hazchem Code and Poisons Schedule.
- Spills and disposal must be dealt with according to instructions in the MSDS.

Design Information

6. General

6.1 *Osmose*[®] promotes timber that has been treated with the preservative as *NatureWood*TM with ACQ and *NatureWood*TM Plus *MoistureGuard*TM treated timber. However, the treated timber product has not been assessed as part of this Certificate because of the multiple treatment plants using the preservative, and the possible multiple sources of supplies of timber to the treatment plants. *NatureWood*TM treated timber is, therefore, outside the scope of this Certificate, but relevant aspects of it may be commented on within the Certificate. Information

about *NatureWood*TM treated timber can be obtained from *Osmose*[®]. *NatureWood*TM treated timber can be identified by labelling attached to the ends of individual pieces.

6.2 *NatureWood*TM preservative provides protection to timber against attack by insects and decay up to Hazard Class H5, as listed in MP 3640 (NZS 3640). After treatment, the minimum retentions on a %/mass/mass basis as elemental copper and quaternary ammonium chloride for timber end use categories, must be as required by the *Osmose*[®] Treated Timber Guide. Timber must then be labelled according to its achieved Hazard Class.

6.3 Timber that has been treated with *NatureWood*TM preservative may be used in any situation, subject to its Hazard Class and structural and other requirements for each particular application. NZS 3602 gives guidance to designers for the selection of timber for hazard situations and the Hazard Class required for timber. It is up to designers and users to select timber of the correct Hazard Class for the hazard situation to which it will be exposed.

6.4 The proper care and handling of treated timber prior to use can have a bearing on its efficiency in service. MP 3640 gives guidelines in this area, which must be followed at all times. Note should be taken in particular of the requirements in regard to cut ends and the protection of areas where the timber has subsequently been or machined. Where the timber has been cut, notched or bored, supplementary protection using Protim Reseal will be required in accordance with the instructions of *Osmose* NZ. This supplementary treatment cannot be expected to be as effective as the original treatment.

7. Structure

When sawn and roundwood timbers have been treated with *NatureWood*TM preservative in accordance with this Certificate, the timber will not lose any strength properties. Treatment of timber using *NatureWood*TM preservative has no negative effect on the bending strength of the timber.

8. Durability

General

8.1 Timber that is not naturally durable can be treated with *NatureWood*TM preservative to prolong its life in order to meet durability requirements of the NZBC, or to meet expected serviceability requirements. The actual durable life of timber protected with *NatureWood*TM preservative will depend on selection and use of the correct Hazard Class of timber, and its use in the correct hazard situation.

8.2 Timber treated with *NatureWood*TM preservative can, in certain situations, be corrosive on metal components used with the timber. Therefore, aluminium, zinc/aluminium alloy and electro-galvanized fixings, fasteners and nails must not be used with *NatureWood*TM treated timber.

8.3 Where metal flashings and the like containing aluminium or zinc are in contact with or experience water runoff from *NatureWood*TM preservative treated-timber, such as may be found with zinc/aluminium alloy-coated mild steel flashings, they may experience high corrosion rates. To obtain maximum life from flashings in these situations, they must either be separated from the timber or water runoff, or be coated with a factory-applied organic coating, (e.g. pre-painted steel coil).

8.4 Requirements for protection from corrosion of metal fixings, fasteners and nails used with *NatureWood*TM preservative treated timber will depend on the durability requirement of the NZBC for the particular building work undertaken, and the exposure zone, location and environment of

the fixing, fastener or nail. NZS 3604 is a means of compliance for durability of fixings, fasteners and nails for non-specific designed buildings, and in this instance may also be used for specifically designed buildings. Where a 50-year durability is required (structural applications), fixings and fasteners in accordance with NZS 3604 Table 4.1 will meet NZBC compliance, except where galvanized steel is specified it must further be protected with a factory-applied organic coating. Where a lesser durability is acceptable, it is also recommended to use similar protection for fixings and fasteners. Materials for nails must be in accordance with NZS 3604 Table 4.3.

9. Timber Treatment

9.1 *NatureWood*TM preservative must not be used in its concentrated form but must be diluted with water to give solution strengths to obtain the target Hazard Class of the treated timber (and hence retention required).

9.2 Treatment must be carried out to the standards stated in MP 3640 (NZS 3640), and as recommended by the NZTPC, using pressure/vacuum cycles.

10. Timber Finishing

10.1 Timber that has been treated with *NatureWood*TM preservative and is exposed to the elements will weather naturally to a light brown colour initially, and eventually, like all other exposed timber, will in most cases turn grey.

10.2 Timber finishing may be carried out using oil or latex-based paints or stains. As for painting or staining any material, the finishing surfaces must be dry and free from any deposits that may affect the application, adhesion or performance of the paint or stain system.

11. Hazardous Building Materials

11.1 Timber treated with *NatureWood*TM preservative will not be harmful to people. *NatureWood*TM preservative does not contain any known carcinogenic chemicals. The main ingredients of the preservative are copper and a quaternary ammonium compound. Copper is widely used in gardening applications and for water reticulation, and the quaternary ammonium compounds are commonly found in household cleaners.

11.2 Care must be taken when handling or using freshly treated timber so that residual treatment compounds do not contact hands or food for example, and become ingested.

Basis of Appraisal

The following is a summary of the technical investigations undertaken.

12. Tests

12.1 Above ground and ground proximity tests of *NatureWood*TM preservative efficacy have been carried out in Australia and Hawaii, and ground contact tests have been carried out in Australia, New Zealand and the USA. Testing was undertaken in New Zealand by The New Zealand Forest Research Institute Limited (*Forest Research*) at test sites at Hanmer Springs, Harihari and Whakarewarewa. This testing concluded that in most cases the decay and insect resistance of *NatureWood*TM preservative treated timber was equivalent to, or better than, CCA (copper, chrome, arsenic) treated timber. From this testing, required retention levels for the various Hazard Classes have been established.

12.2 Tests have been carried out on treated and untreated

timber samples in accordance with ASTM standards to determine bending strength properties. These tests demonstrated that no negative effect occurred to the timber bending strengths after treatment with *NatureWood*TM preservative.

13. Other Investigations

13.1 Opinions and assessments on the suitability of *NatureWood*TM preservative as a timber treatment product, and assessment of all supporting documentation have been undertaken by *Forest Research* experts.

13.2 The manufacturer's Treated Timber Guide has been examined by BRANZ and *Forest Research*, and found to be satisfactory.

13.3 BRANZ technical experts have given an opinion on the likely effect of the *NatureWood*TM preservative treatment process on fixings, fastenings and nails used in conjunction with the treated timber.

14. Quality

14.1 The manufacture of the product has been examined by BRANZ, and details of the quality and composition of the raw materials used were obtained and found to be satisfactory. *NatureWood*TM preservative manufacture has been assessed and registered as meeting the requirements of ISO 9002 by Telarc, Registration Number 242.

14.2 Quality of manufacture of the product is the responsibility of Osmose[®] NZ.

14.3 Quality of treatment of the timber using the product in accordance with the instructions of Osmose[®] NZ is the responsibility of the timber treaters.

14.4 Specifying the correct Hazard Class of timber treated with *NatureWood*TM preservative for the intended end use is the responsibility of the building designer.

15. References

- MP 3640: 1992 Minimum requirements of the NZ Timber Preservation Council Inc.
- New Zealand Building Code Handbook and Approved Documents, Building Industry Authority, 1992.
- NZS 3602: 1995 Timber and wood-based products for use in building.
- NZS 3604: 1999 Timber framed buildings.
- NZS 3640: 2002 Timber preservation (Draft).
- The Building Regulations 1992, up to, and including January 2002 Amendment.

Classifications for Treated Timber

H1 Hazard Level

Exposure - inside above ground. **Conditions** - completely protected from the weather and well-ventilated. **Biological Hazards** - insects other than termites (i.e. lyctid or anobiid). **Uses** - framing, flooring, furniture, and interior joinery.

H2 Hazard Level

Exposure - inside above ground. **Conditions** - completely protected from the weather and well ventilated. **Biological Hazard** - borers including termites. **Uses** - framing, flooring, furniture and interior joinery.

H3 Hazard Level

Exposure - outside above ground. **Conditions** - subject to periodic moderate wetting and leaching. **Biological Hazard** - moderate decay, borers and termites. **Uses** - weatherboard, fascia, window joinery, framing and decking.

H4 Hazard Level

Exposure - outside in ground. **Conditions** - subject to severe wetting and leaching. **Biological Hazard** - severe decay, borers and termites. **Uses** - fencing, greenhouses, pergolas and landscaping timber (non-critical structures).

H5 Hazard Level

Exposure - outside in ground contact with or in fresh water. **Conditions** - subject to extreme wetting and leaching and/or where the critical use requires a higher degree of protection. **Biological Hazard** - very severe decay, borers and termites. **Uses** - retaining walls, piling, house stumps, building poles, cooling tower fill.

Osmose® NZ Information about Treated Timber Hazard Classes.

(See NZS 3640 and NZS 3602 for specific details regarding Hazard Classes and uses of timber in building).

In the opinion of BRANZ, Osmose® NatureWood™ ACQ (alkaline copper quaternary) Timber Preservative is fit for purpose and will comply with the Building Code to the extent specified in this Certificate provided it is used as set out in this Certificate.

The Appraisal Certificate is issued only to the Certificate Holder, Osmose® NZ, and is valid until further notice, subject to the Conditions of Certification.

Conditions of Certification

1. This Certificate relates only to the product as described herein.
2. The Certificate Holder:
 - a) continues to have the product reviewed by BRANZ;
 - b) shall notify BRANZ of any changes in product specification or quality assurance measures prior to the product being marketed;
 - c) abides by the BRANZ Appraisals Services Terms and Conditions.
3. The product and the manufacture are maintained at or above the standards, levels and quality assessed and found satisfactory by BRANZ.
4. This Certificate must be read, considered and used in full together with the technical literature.
5. BRANZ makes no representation as to:
 - a) the nature of individual examples of, batches of, or individual installations of the product, including methods and workmanship;
 - b) the presence or absence of any patent or similar rights subsisting in the product or any other product;
6. Any reference in this Certificate to any other publication shall be read as a reference to the version of the publication specified in this Certificate.
7. This Certificate does not address any Legislation, Regulations, Codes or Standards, not specifically named herein.

For BRANZ



R I Burnett



M E Reed

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