
MISCELLANEOUS PUBLICATION

**Specification of the
MINIMUM REQUIREMENTS OF THE
NZ TIMBER PRESERVATION COUNCIL INC.**

Revision of MP 3640:1988

UDC 691.11.004.4

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FOREWORD

The Timber Preservation Council was formed in 1987 with the encouragement of Government to take over the role of Government agencies currently controlling the timber preservation industry. Its major objectives are: to secure and maintain a high standard of timber preservation and to ensure that the public interest is protected in matters relating to timber preservation; to promote the reputation and use of New Zealand treated timber in New Zealand and overseas; to identify a clear point of recourse for consumers; and to encourage efficiency and technical innovation to achieve the required treatment levels in treated timber in the most efficient and economic manner.

The Timber Preservation Council has set out to ensure the delivery of a reliable product of consistent quality to specifiers and users of treated timber. All treated timber bearing the Woodmark, the Council's registered mark indicating preservative treatment in accordance with a recognized standard, is warranted by its supplier to have been treated wholly in accordance with the Council's specifications in a plant whose activities are constantly monitored by a Quality Assurance plan regularly audited by an independent agency responsible to the Council.

This 1992 revision of MP 3640:1988 incorporates the following major changes:

1. Introduction of a specification for Hazard Class H2. This is based on that in the revised version of AS 1604 (approved preservatives, their retentions and penetrations are the same) and has been introduced at the request of exporters of treated timber to Australia.
2. Complete revision of Hazard Class H3 specification to introduce a heartwood penetration requirement for some lines. This specification is now much more closely aligned to Australian H3 specifications.
3. Introduction of a new approved preservative (tributyltin naphthenate) and deletion of other (organochlorine insecticides).
4. Construction of tables for preservative retentions in all Hazard Classes in a style similar to that in AS 1604.
5. Introduction of changes in Preservative Retention Zones in all Hazard Classes in general alignment with those in AS 1604.
6. Introduction of a new clause (7.3.3.1) explaining the derivation of percent mass/mass retentions, how these relate to mass/volume retentions and how these are affected by basic wood density.
7. The inclusion of creosote and creosote/oil mixture in the specifications for Hazard Classes H3, H4 and H5.

REVIEW OF STANDARDS

Suggestions for improvement of this Standard will be welcomed. They should be sent to the Chief Executive, Standards Association of New Zealand, Private Bag, Wellington.

NOTES

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MISCELLANEOUS PUBLICATION

Specification of the MINIMUM REQUIREMENTS OF THE NZ TIMBER PRESERVATION COUNCIL INC.

1 SCOPE AND INTERPRETATION

1.1 Scope

This publication sets out specifications for the protection of timber from attack by insects, decay, or marine borers. It provides guidance in the form and composition of the preservative, the care of treated timber and recommendations as to use.

1.2 Interpretation

“SHALL” AND “SHOULD”. In this specification the word “shall” indicates a requirement that is to be adopted in order to comply with the specification; the word “should” indicates a recommended practice.

2 DEFINITIONS

2.1

For the purposes of this specification, unless inconsistent with the context, the following definitions shall apply:

ADMINISTRATOR. The person nominated by the treatment plant owner to be responsible for quality assurance at that plant, also known as the Quality Assurance Administrator (QAA).

APPROVED. Approved by the N.Z. Timber Preservation Council Inc.

BASIC DENSITY. Oven dry weight in relation to wet volume, of a sample of wood, expressed as g/cm³ or kg/m³.

BORINGS. Borings are round samples extracted from treated wood for the purpose of determining preservative penetration or retention. The holes left after extraction should be plugged with dowels treated with the same preservative and to the same retention as the piece from which the boring was taken.

BRAND. An identifying mark approved by the Council applied to pieces or packets of timber in accordance with this specification.

COUNCIL. The N.Z. Timber Preservation Council Inc.

CONCENTRATION. Where expressed as a percentage, concentration is on the basis of mass per unit mass, unless otherwise stated.

CORE. The central one-ninth of the nominal sawn dimensions.

FACE BRANDING. The identification of treated timber by means of marks on the face, back or edge of each piece of treated timber.

FIXED PRESERVATIVE. A preservative in which the effective chemicals are fixed so that leaching will be minimized.

GREEN-OFF-SAW. The high state of moisture in freshly sawn timber normally found in living trees.

GROUNDLINE AREA. That part of a pole, post, or pile extending from 300 mm above to 600 mm below groundlines.

HAZARD CLASS. One of 6 categorized environments or conditions of use where timber is at particular risk of biodegradation by one or more biological agencies such as fungi, insects, bacteria or marine organisms.

HEARTWOOD. The non-living central part of a tree trunk containing tannins and resins etc. which can be differentiated from sapwood by means of chemical reagents.

IDENTIFICATION MARK. A mark or label or other identification approved by the Council placed on the wood by the treater. The identification mark shall bear the Woodmark, the registration number allotted to the particular treatment plant by the Council, and the Hazard Class to which the timber has been treated, in the form (for example) H3, and optionally, the treater's name or trade name.

IN SITU TREATMENT. Fungicidal solutions applied after machining or cutting treated timber to provide additional protection to the exposed cut surfaces.

LEACHABLE PRESERVATIVE. A preservative whose soluble substances are removed or are partially removed by the action of water. For leaching to occur, treated wood must be wet and its surfaces in prolonged contact with water or a damp medium into which the dissolved preservatives can dissipate.

MACHINED TIMBER. Sawn timber which has been planed or moulded to give a smooth finish.

OWNER. The person or persons in whose name the treatment plant is licensed or registered.

PACKET BRANDING. Weatherproof legible identification placed on each side of a packet of treated timber (intended to be handled as a single unit) with all letters and symbols at least 200 mm high.

PILES. Round or square sawn timber products used for building foundation supports, soil stabilization purposes, or marine structures.

PLANT. The whole organization or entity required to effect the preservative treatment of timber.

PLANT OPERATOR. The person at the plant site responsible for the operation of the preservative treatment process.

POSTS. Strainer posts and round, part round or sawn posts not longer than 3.6 m.

PRESERVATIVE. An approved chemical applied to timber with the object of protecting the timber from degradation by any timber-destroying organism.

QUALITY ASSURANCE PLAN. A plan approved by the Council setting out the method of operation of a treatment plant such that preservative treated timber produced by the plant may reasonably be expected to comply with the Council's specification of results to be achieved.

RETENTION. The quantity of preservative as defined in the relevant hazard class specification retained in the wood after treatment (see 7.3.3).

RETENTION ZONE. That zone of treated wood that shall contain a specified concentration of preservative. This zone varies and its precise dimension and location is set out in the appropriate Hazard Class specification.

SAMPLE and SET OF SAMPLES. Samples shall consist of:

For boron: One cross section sample 5 – 10 mm thick.

For CCA roundwood: One boring.

For sawn CCA: One boring or one cross section sample as above.

For LOSP: Three cross section samples at least 10 mm thick taken at least 450 mm from the same end of the piece being sampled.

The set of samples taken from each charge shall consist of:

For boron: Ten cross section samples.

For CCA: Ten cross section samples or ten borings.

For LOSP: Ten sets of three cross section samples.

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SAPWOOD. The outer portion of a tree trunk containing living cells and water conducting and storage tissue which can be differentiated from heartwood by means of chemical reagents.

SAWN TIMBER. Timber which has been cut with a saw, which may or may not be subsequently machined.

TECHNICAL ADVISER. An individual or organization who shall be retained by the plant owner and who shall:

- (a) Ensure the plant and equipment is capable of working within suitable tolerances to treat timber in accordance with the Council's specification;
- (b) Ensure that each plant is operating in terms of its installed Quality Assurance plan;
- (c) Provide all necessary training in operational and technical requirements of treatment and familiarize operators with the Council's specification requirements;
- (d) Provide analytical facilities;
- (e) Provide continuing technical and operational support and promptly respond to isolate and resolve treatment problems.

TIMBER. The wood from trees whether naturally round or sawn, hewn, split, or otherwise fashioned or manufactured into veneer or plywood.

TREATED. Treated with preservative to the relevant specification approved by the Council.

WOODMARK. A mark reserved for the Council, which, when applied to timber, indicates that the timber to which the mark has been applied has been treated in accordance with the Council's specification in a plant approved by the Council and under the discipline imposed by an operative, audited, Quality Assurance plan.

3 COUNCIL REQUIREMENTS OF REGISTERED TREATMENT PLANTS

3.1 Registered treatment plants

Plants will treat wholly in accordance with the terms of this specification.

3.2 Treatment plant records

Full records of all timber treatment carried out will be retained by each treatment plant for a period of 10 years.

3.3 Treatment plant documentation

Copies of treatment plant documentation relating to treatments carried out in specific periods will be available upon request from the Council.

3.4 Treatment plant results

Achievement of the results required by the provisions of this specification will normally result in satisfactory in-service performance of timber treated in accordance with the specification.

3.5 The Woodmark

The Council recognizes that some treatment plants will elect to operate outside the Council's quality control systems. Such material will not bear the Woodmark, the Council's symbol of quality.

3.6 Woodmark documentation

While it is not possible to say that treated timber not bearing the Woodmark will necessarily be defective, only with Woodmarked timber can an end user or specifier be sure that treated timber has been produced under supervision to a consistently high standard. Documentation will be available to evidence the care taken in preservative treatment.

3.7 The Woodmark symbol

The Council's symbol affixed to timber to indicate that it has been treated in accordance with these specifications is shown below:

The minimum height is 10 mm and the brand must be applied immediately adjacent to the plant number and Hazard Class brand.

3.8 Enquiries

Any enquiries regarding these specifications should be addressed to:

The Executive Officer
NZ Timber Preservation Council
P O Box 308
Wellington
New Zealand
Telephone 0-4-473 5200
Fax 0-4-473 1913

4 RECOMMENDATIONS AND ADVISORY NOTES

4.1 Care of treated timber

4.1.1

The care and proper handling of timber after treatment and prior to use (and in service where the relevant Hazard Class contains recommendations upon necessary or desirable maintenance procedures) can have a bearing on its efficiency in service.

4.1.2

Treated timber should be properly cared for before use to avoid exposure to a hazard situation for which it has not been treated and therefore against which it has not been protected. For example, H1 and H3 timbers should be stored out of contact with the ground. Timbers treated with leachable preservatives should also be protected from prolonged exposure to the weather before use and afterwards by observation of recommended maintenance procedures.

4.1.3 Building poles and piles

4.1.3.1

Ends cut after treatment must not be put into the ground, nor closer than 300 mm to the ground and, where possible, should be continuously protected from the weather.

4.1.3.2

Poles should have been held at least three weeks after treatment and any cut or bored surfaces should have been allowed to surface dry before applying *in situ* preparations or connecting metal fasteners.

4.1.3.3

Steel fasteners should be hot dip galvanized and should be protected from intimate contact with the wood by shrink on plastic sleeving, or by grease or other moisture barriers, before fastening.

4.2 Drying

4.2.1

Consideration should be given to the necessity of drying timber that has been pressure treated with water-borne preservatives. The moisture content of the material is similar to that of timber green-off-saw and for some purposes will require drying to a moisture content appropriate to its end use. Pressure treated timber often takes longer and may be more difficult to dry than freshly sawn green timber.

4.3 Machining

4.3.1

With timber for use in Hazard Class H3 and above, it is inadvisable to cut or machine the timber deeply after treatment. When this is unavoidable, cut surfaces should be given additional protection when all cutting is complete, using one of the preparations referred to in 8.5, *in situ* applications applied to wood exposed by the cutting of treated timber.

4.3.2

Timber treated with LOSP shall not be deep cut or machined after treatment unless the timber is to be retreated. Failure to provide such additional protection may negate the worth of the initial treatment.

5 OTHER DOCUMENTS

5.1 Related document

Timber Preservation Quality Manual. NZ Timber Preservation Council Inc., Wellington 1992

5.1.1

This Manual provides a framework of quality systems designed to ensure that timber preservation and associated processes are carried out in a controlled manner.

5.1.2

Its provisions must be adhered to by timber preservation plants which are licensed with the Timber Preservation Council Inc. to use the "Woodmark" symbol.

5.2 Documents of interest

Documents of interest to treatment plant proprietors and operators include:

NEW ZEALAND STANDARDS

NZS 3602:1990	Code of practice for specifying timber and wood-based products for use in building
NZS 3603:1990	Code of practice for timber design
NZS 3604:1990	Code of practice for light timber frame buildings not requiring specific design
NZS 3605:1992	Timber piles and poles for use in building
NZS 3607:1989	Specification for round and part-round timber fence posts
NZS 3621:1987	Standard names of commercial timbers in New Zealand

AMERICAN STANDARD

AWPA P1-78	Standard for coal tar creosote for land and fresh water use. American Wood Preservers' Association
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AUSTRALIAN STANDARDS

AS 1143:1973	High temperature creosote for the preservation of timber
AS 1604:1980	Preservative treatment for sawn timber, veneer and plywood

OTHER PUBLICATIONS

Code of practice for the safe use of timber preservatives and antisapstain chemicals. Occupational Safety and Health, Wellington, 1992.

Code of practice guidelines for anti-pollution in wood preservation plants. New Zealand Wood Preservers' Association Inc, Wellington, 1977.

Treatment and disposal of timber preservative wastes. Waste Management Guide 02. New Zealand Department of Health, Wellington, 1987.

Australian and New Zealand guidelines for the assessment and management of contaminated sites. ANZECC 1992.

6 IDENTIFICATION

6.1 The Woodmark

The Woodmark is a trademark of the NZ Timber Preservation Council. Only timber carrying the Woodmark is warranted to have been treated in accordance with the Council's specification in a plant approved by the Council.

6.2 Minimum Council requirements

6.2.1

Certain minimum requirements have been prescribed by the Council so that users may identify treated timber as preservative treated to the Council's specification, identify the plant at which timber was treated so that the facts of treatment may be established by the Council or by others if required, and distinguish between timbers treated for different end uses.

6.2.2

Each piece of timber shall, subject to exemptions or exclusions set out below, bear as a minimum identification the number of the treatment plant where treatment was carried out and the number of the Hazard Class to which the timber has been treated. It shall also bear the Woodmark, as evidence of compliance with this specification, if the treater is licensed to use the Woodmark.

6.3 End branding

6.3.1

The following table has particular significance to end branding. The relevant brand may also be included during face or packet branding operations, provided it is incorporated immediately after the plant number or trade name of the organization performing such branding.

6.3.2

Unless other approved, all markings shall be at least 10 mm high.

Table 1 – Branding and identification of preservative treated timber

Hazard class	Typical uses
H1	Building timbers including plywood protected from the weather
H2	Building timbers which may be exposed to termite attack or low decay hazard
H3	Exterior joinery, exposed verandah floors, roof shingles, rails, gates, fence battens and exterior grade of plywood
H4	Fence posts, barn poles, crib walling, bridge timbers, wharf deckings and plywood
H5	Transmission and building poles, foundation piles, horticultural poles and posts, plywood for treated timber frame foundations
H6	Marine piles and timbers

6.4 Specific requirements for branding or other means of identification of treated timber

6.4.1 *Solid timber*

6.4.1.1

Sawn treated timber shall be identified either on one end of each piece or within 150 mm of an end.

6.4.1.2

Timber cut at, or adjacent to the treatment plant site for subsequent finger-jointing remote from the plant shall be packet branded. Sawn timber no longer than 1.5 m nor greater than 5000 mm² in cross section may also be packet branded.

6.4.1.3

Machined timber shall be either end-branded or branded on a broad face at 150 mm from an end or repetitively along the entire length at approximately 600 mm centres. Branding shall be by means of a permanent ink mark, incised mark, burned mark, or other means as approved by the Council.

6.4.1.4

Timber which is machined on less than 4 sides may bear identification marks either on a dressed surface or at the end.

6.4.1.5

Timber which is machined at a place remote from the treatment plant may not be marked prior to treatment but shall be identified at one end of each piece at the treatment plant. In addition, the edge of each piece of the outer tiers of each packet is to have identification applied not less than one metre from the packet end.

6.4.1.6

For the purposes of this specification finger-jointed timber shall be identified in accordance with 6.4.1.5.

6.4.1.7

Timber which need not be identified as treated includes fence battens and droppers, timber not thicker than 19 mm, timber not wider than 50 mm and timber not greater than 1250 mm² in cross section.

6.4.1.8

Building foundation or support piles or poles shall be identified as approved by the Council with a permanent ink, burned, or incised description or affixed tag. This shall be located 1/3 (one-third) of the length of the piece from the top and facing the top. If, in the case of round piles, it is uncertain which end will be the top in service, then a brand shall be placed 1/3 of the length from both ends.

6.4.1.9

Square sawn piles will use the brand supplied by the Council to approved producers of these products.

6.4.2 *Plywood*

6.4.2.1

Plywood made from treated veneers or treated in made up form shall be identified on the back or edge of each sheet with the plymaker's name, registered number of the treatment plant, and the Hazard Class. Plywood made up from untreated veneers and with an insecticide added to the glue, shall be identified on the back or edge, with, as a minimum, the plywood manufacturer's name or trademark. Such brands shall include the words TREATED, TGL, and H1.

6.4.2.2

Plywood in made up form, destined for treatment remote from the manufacturer's premises, may be branded at the time of manufacture in accordance with the above, except that each pack or part-pack shall be marked with an approved tag signifying that the material is untreated. The tag may only be removed at the treatment plant after successful treatment.

6.4.3 *Packet branding*

6.4.3.1

Packets of treated timber intended for subsequent processing may be packet branded with a weather resistant identification on each side of each packet. The identification shall contain, as a minimum, the treatment plant number, Hazard Class to which the timber is treated, the treater's name, and all letters and numbers comprising the brand shall be at least 200 mm high.

6.4.4 *Branding of bundled fence palings and pickets*

6.4.4.1

Fence palings and pickets when bundled together in a rectangular packet need not be individually labelled. Each paling or picket on an outside face of the packet shall be identified on or at the end of each piece.

6.4.5 *Poles*

6.4.5.1

Telephone and power transmission poles may alternatively be identified in a manner acceptable to the Council and the user.

6.4.6 *Timber treated for export*

6.4.6.1

Timber treated for export to overseas standards shall be identified in accordance with the requirement of the importing country. Where no requirement exists then the timber shall be identified in accordance with the Council's specifications.

6.4.6.2

Registered numbers issued by the New South Wales Forestry Commission to New Zealand plants in the series 660 to 999 may be used as an alternative to the Council's registered number, after approval has been obtained from the Council.

6.4.7 *Imported treated timber*

6.4.7.1

Imported treated timber which complies with the Council's specifications and requirements may be branded by a licensee in accordance with the Council's regular specification.

7 HAZARD CLASSES AND TREATMENT REQUIREMENTS

7.1 Guide to Hazard Classes for various end use situations

7.1.1

Table 2 lists a range of timber products and the Hazard Classes to which they would normally be treated.

Table 2 – Guide to hazard classification for various end use situations

Item	Hazard class	Group
Battens, fence *	3	A
Beams, laminated (interior) †	1	A
Beams, laminated (exterior) †	3 or 4	A
Boat building timbers	4	A
Boxing, concrete	4	A
Compost bins	4	A
Containers, plants	4	A
Cooling towers	5 or higher	B
Crib walling, sawn *	4	A (or 5B)
Culverts	4	A
Decking, bridge or wharf	4	A
Decking supports (in ground)	4 or 5	A
Drain linings	4	A
Droppers, fence *	3	A
Fascia board	3	A
Fire escapes	4	A
Flooring	1	A
Formwork, concrete	4	A
Framing, house	1	A
Furniture, garden	3 and 4	A
Garden edging	4	A
Gates	3	A
Glasshouse timbers	3 or 4	A
Horticultural timbers (severe sites)	5	C
Joinery, exterior	3	A
Joinery, interior	1	A
Joists, ceiling	1	A
Joists, floor	1 or 3	A
Marine timbers, i.e. in sea water	6	
Mushroom boxes	4	A
Oyster farming timbers	6	
Palings, fence *	3	A
Patio decks	3	A
Pergolas	3 or 4	A
Piles, building foundation. *	5	B

Table 2 (cont.)

Item	Hazard class	Group
Piles, freshwater	4	A
Piles, marine	6	
Plates, wall	1	A
Plywood, internal linings, sarking, flooring	1	B
Plywood, external cladding, bracing, decking	3	B
Plywood, ground contact, sheathing, bins, races	4	B
Plywood, ground contact, treated timber frame foundations	5	D
Poles, barn	4	A
Poles, elec.transmission	5	A
Poles, horticultural (severe sites)	5	C
Poles, houses	5	B
Poles, telecommun.	5	A
Poles, retaining walls	5	A
Posts, guardrail	4	A
Posts, horticultural (severe sites)	5	C
Posts, round, half round, sawn	4	A
Posts, sawn, for domestic fencing *	4	A
Purlins	1	A
Rails, fence	3	A
Sarking	1	A
Seed boxes	4	A
Shingles, roof	3	A
Slipways (marine)	6	
Spa pools **	4	A
Studs	1	A
Sun decks	3	A
Trusses, roof	1	A
Turnery	1	A
Verandah floors	3	A
Verandah supports in ground	4 or 5	A
Weatherboards (horizontal)	1 or 3	A
Weatherboards (vertical)	3	A
Wet process factories	4	A

* Treated in final shape and form

** Selected sapwood only

† Beams may be treated up to H4 after manufacture or manufactured of laminations treated to retentions H 1, H3 or H4 before manufacture

7.2 Summary of Hazard Class descriptions

7.2.1 Hazard Class H1

7.2.1.1

Where timber, including plywood, is used out of contact with the ground and in situations which are adequately ventilated and continuously protected from the weather. Approval of this treatment for exterior use is conditional upon protection from direct exposure to the weather by a well maintained three-coat paint system.

7.2.2 Hazard Class H2

7.2.2.1

Where timber is used in interior situations which, because of intermittent wetting, may be exposed to a low decay hazard, or which may be subjected to termite attack. Applicable to some export commodities.

7.2.3 Hazard Class H3

7.2.3.1

Where timber may be exposed to the weather, or is used as exterior covering of buildings, or as exterior joinery but will not be in contact with the ground.

7.2.4 Hazard Class H4

7.2.4.1

Where timber is used in contact with the ground, or in fresh water, or in other situations favourable to decay. Very severe environments such as some horticultural sites constitute a higher Hazard Class (H5), which should also be used for critical end uses such as timber for building foundations.

7.2.5 Hazard Class H5

7.2.5.1

Where timber is used in contact with ground which because of climate, soil, or other factors presents an extreme decay hazard, or where the commodity's critical use requires an additional protection.

7.2.6 Hazard Class H6

7.2.6.1

Where timber is subjected to prolonged immersion in sea water.

7.3 Explanation of Hazard Class requirements in individual Hazard Class specifications

7.3.1 Species as listed in the Timber Preservation Council publication, *Timber Preservation Quality Manual*

7.3.1.1

Those species listed are those that have been proven capable of being treated to the requirements of the particular Hazard Class. The Council should be consulted before treatment of unlisted species is attempted.

7.3.2 Penetration

7.3.2.1

The penetration of the preservative into timber should be checked using an appropriate chemical reagent. Penetration must be continuous through the wood to the required depth.

7.3.3 Retention

7.3.3.1

Retention of preservatives required to protect timber in service are based on results of long term field testing. Almost invariably, these tests were established to determine the amount of preservative required to protect a given volume of wood, i.e. the mass (weight) of preservative per cubic foot or cubic metre of wood.

7.3.3.2

In these specifications, preservative retention is expressed as the mass of chemical as a percentage of the mass of oven dry wood (o.d. wood) in which it is contained. These values are based on the mass of preservative per volume of wood which experience has shown will provide very long term protection to the timber in the designated Hazard Class. In Hazard Class 4, for example, this value is around 9 – 12 kg/m³ of CCA Class I salt.

7.3.3.3

In a typical treatment charge, the range of retentions achieved will vary around the mean by plus or minus one third. Thus, if a charge retention of, say, 12 kg/m³ CCA salt is achieved then the expected range of retentions in that charge will be from approximately 8 kg/m³ to 16 kg/m³. The lower value (8 kg/m³) is thus the expected minimum mass/volume piece retention.

7.3.3.4

This may then be converted to an expected minimum mass/mass piece retention by dividing it by the basic density of the wood.

7.3.3.5

In these specifications the nominal value for the basic density of pines is 400 kg/m³.

7.3.3.6

However, the basic density of, for example, radiata pine wood varies from around 300 kg/m³ to 600 kg/m³, depending upon, among other things, the locality within the country where the tree is grown and the position of the wood in the log. This range of basic density means that the mass/mass retentions equivalent to a nominated minimum mass/volume piece retention will vary considerably as shown in table 3.

Table 3 – Total active element (TAE) retentions equivalent to 8 kg/m³ CCA Class I salt in wood of differing basic densities

Salt retention kg/m ³	Basic density kg/m ³	TAE %
8.0	300	0.96
8.0	350	0.83
8.0	400	0.72
8.0	450	0.64
8.0	500	0.58
8.0	550	0.53
8.0	600	0.48

7.3.3.7

Thus, for example, 8 kg/m³ of a typical Class I CCA is equivalent to 0.72 % Total Active Elements in wood of basic density of 400 kg/m³ but is equivalent to only 0.53 % Total Active Elements in wood of basic density of 550 kg/m³. Since there is no evidence to suggest that the original value of 8 kg/m³ of preservative salt is inadequate to protect timber of basic density 550 kg/m³, and since 0.53 % TAE is equivalent to that, it follows that the latter retention passes requirements. Therefore, *pro rata* adjustments may be made to analytical results when the basic density can be shown to differ significantly from the nominal figure.

7.3.4 Penetration and retention sampling requirements

Samples shall be taken in clear, straight-grained wood away from knots, splits, checks or other defects and at a minimum distance from the end or edge of pieces as indicated in table 4. Samples shall be representative of the charge, but where mixed charges occur, sampling shall be directed at the produce considered to be the most difficult to treat.

Table 4 – Positions within each piece of timber where samples are to be taken

Hazard class	Preservative type	Minimum distance from piece end mm
H1 Group A	Boron compounds CCA	300 450
H1 Group B	Boron compounds CCA	150 from one edge
H3 Group A H3 Group B	CCA, LOSP CCA, LOSP	450 150 from one edge
H4 Group A H4 Group B	CCA CCA	600 150 from one edge
H5 Groups A, B and C H5 Group D	CCA CCA	600: sawn timber Poles: groundline 150 from one edge
H6	CCA	Mid-point

7.3.5 Penetration and retention tolerance

7.3.5.1

For most Hazard Classes the penetration and retention requirements must be met in a minimum of 90 % of the samples in any set. Exceptions are in the heartwood penetration requirements in Hazard Class H4 where the requirement must be met in a minimum of 60 % of the samples in any set.

7.4 Substandard treatments

7.4.1

Timber charges represented by samples not meeting the requirements of this specification shall be classed as substandard, and shall either be redried and retreated, rebranded in a lower Hazard Class whose requirements it meets, or its brands removed and the timber sold as untreated.

8 PRESERVATIVES APPROVED BY THE COUNCIL

8.1 Fixed waterborne preservatives approved for use in all Hazard Classes

These are deposited in the wood in a relatively insoluble form and are therefore suitable for use where leaching by water may occur.

8.1.1

Copper-chrome-arsenate (CCA) preservatives having a broad spectrum of effectiveness against marine borers, wood destroying fungi and insects approved for use in all Hazard Classes.

8.1.1.1 CCA Class I

Copper, chromium (hexavalent) and arsenic dissolved in water to give a solution containing the active elements within the following proportions:

Cu 23 – 25 %

Cr 43 – 47 %

As 30 – 32 %

8.1.1.2 CCA Class II

Other formulations not complying with tolerances in Class I but which have elemental proportions within the following limits:

Cu 20 – 30 %

Cr 25 – 47 %

As 30 – 50 %

8.1.2

Reduced retentions are permitted in some Hazard Class specifications for formulations complying with element proportions of CCA Class I.

8.2 Non-fixed waterborne preservatives which have mainly insecticidal activity approved for use in Hazard Class H1

8.2.1

Boron compounds approved on the basis of boron content.

8.3 Oilborne preservatives

8.3.1 Creosote

Creosote is an oily preservative used singly or in mixture with up to 30 % fuel oil approved for use in Hazard Classes H3, H4 and H5. The creosote should comply with American Wood Preservers' Association Standard P1-78 or Australian Standard AS 1143.

8.4 Insecticides for sawn timber and made up plywood approved for use in Hazard Class H1

8.4.1

Chlordane

Synthetic pyrethroids:

Permethrin

Cypermethrin

Deltamethrin

8.5 Insecticides for glue-line treatments approved for use in Hazard Class H1

8.5.1

Actellic (Pirimiphos methyl)

8.6

Light organic solvent preservatives (LOSP) which have mainly fungicidal activity, but to which termiticides may be added when required, approved for use in Hazard Classes H2 and H3

8.6.1 *Fungicides*

8.6.1.1

Bis-(tri-n-butyltin) oxide (TBTO)

Bis-(tri-n-butyltin) naphthenate (TBTN)

Approved formulations

8.6.2 *Termiticides*

8.6.2.1

Chlordane

Synthetic pyrethroids

Permethrin

Cypermethrin

Deltamethrin

8.6.3 *Water repellents*

The addition of water repellent waxes and resins is optional but is desirable where dimensional stability of the timber is important.

8.7 *In situ* applications applied to wood exposed by the cutting of treated timber

8.7.1

When untreated wood is exposed by the unavoidable cutting of treated timber, the liberal application of one of the following to a well dried surface is recommended.

8.7.2 *Creosote*

Proprietary formulations of:

Zinc naphthenate

TBTO

TBTN

} in suitable organic solvents

8.8 Trade names of preservatives

A list of common trade names of preservatives conforming to requirements in 8.1.1 – 8.5.1 is shown in Appendix A. It includes preservatives which are currently supplied to commercial treatment plants or which otherwise are registered with the Pesticides Board for use in New Zealand.

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9 HAZARD CLASS SPECIFICATIONS

9.1 Hazard Class H1

9.1.1

Where timber, including plywood, is used out of contact with the ground and in situations which are adequately ventilated and continuously protected from the weather by roofs or external walls. The primary risk to timber in this situation is from attack by wood-boring beetles such as *Anobium* and *Lyctus*.

9.1.2

Exterior cladding and associated trim may be included in Hazard Class H1 provided that it is additionally and continuously protected by a well-maintained three coat paint system.

9.1.3 Group A – Sawn timber

9.1.3.1 *Typical uses*

Framing, interior joinery and finishing, flooring, painted horizontal weatherboards and associated trim.

9.1.4 *Preservatives*

The following preservatives are approved for use in this Hazard Class:

9.1.4.1 *Waterborne preservatives*

Boron compounds

CCA Class I

CCA Class II

9.1.4.2 *Light organic solvent preservatives*

Permethrin

Cypermethrin

Deltamethrin

9.1.5 *Species*

Refer to Timber Preservation Quality Manual, Appendix 3 – "Schedule of timber species which may be treated".

9.1.6 *Penetration*

Complete sapwood penetration is required in not less than 90 % of samples in any set.

NOTE – Because there is no satisfactory spot test for synthetic pyrethroids, compliance with this specification when those preservatives are used, can only be established by chemical analysis of the treated timber.

9.1.7 *Retentions*

9.1.7.1 *Retention zones*

The retention zone is the sapwood in the central ninth of the cross section, based on the nominal sawn dimension.

For dry boron treated timber (i.e. moisture content less than 24 %) the sapwood cross section is an additional retention zone.

9.1.7.2 *Minimum concentration of preservative in the retention zone*

A minimum concentration of specified preservative components, as set out below, is required in 90 % of samples.

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Minimum concentration percent mass/mass O.D. wood

CCA Class I and II	As:	0.04
Boron compounds		
Hardwoods core	H_3BO_3 :	0.20
Softwoods (wet) core	H_3BO_3 :	0.10
(dry) core	H_3BO_3 :	0.04
(dry) cross section	H_3BO_3 :	0.10
Permethrin:		0.006
Cypermethrin:		0.006
Deltamethrin:		0.0006

9.1.8 Branding

9.1.8.1

Sawn treated timber shall be branded or otherwise identified on one end of each piece or within 150 mm of an end in accordance with section 6 of these specifications.

9.1.8.2

Machined, treated timber shall be branded or otherwise identified either on the end, or on a broad face within 150 mm of an end or repetitively along the length at 600 mm centres in accordance with section 6 of these specifications.

9.1.9 Group B – Plywood

9.1.9.1 *Typical uses*

Interior lining, bracing, cupboards, drawers, shelves, flooring, sarking, box beams.

9.1.10 *Preservatives*

The following preservatives are approved for use in this Hazard Class:

9.1.10.1 *Glue-line additives*

Actellic

9.1.10.2 **Other preservatives**

Boron compounds

CCA Class I

CCA Class II

Permethrin

Cypermethrin

Deltamethrin

9.1.11 *Species*

All suitable species.

9.1.12 *Penetration*

9.1.12.1 *Veneer treatment*

Complete penetration of each veneer.

9.1.12.2 *Glue-line treatment*

Not applicable.

9.1.12.3 *Panel treatment*

Outer veneers shall be completely penetrated and there shall be evidence of preservative in each veneer on any cross section examined. Measurement of penetration shall be by an approved spot test.

NOTE – Because there is no satisfactory spot test for synthetic pyrethroids, compliance with this specification when those preservatives are used, can only be established by chemical analysis of the treated timber.

9.1.13 *Retentions*

9.1.13.1 *Retention zone (not applicable to glue-line treatments)*

The retention zone is a full cross section within a 200 mm x 50 mm sample cut parallel with the face grain, equidistant from both ends of the sheet between 150 mm and 200 mm from one edge.

9.1.13.2 *Minimum concentration of preservative in the retention zone*

A minimum concentration of specified preservative components, as set out below, is required in 90 % of samples. Samples which have failed the penetration test will be deemed to have failed this requirement.

Minimum concentration percent mass/mass O.D. wood

CCA Class I and II	As:	0.04
Boron compounds	H ₃ BO ₃ :	0.10 (softwoods)
	H ₃ BO ₃ :	0.20 (hardwoods)
Permethrin:		0.006
Cypermethrin:		0.006
Deltamethrin:		0.0006

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9.1.13.3

The concentration of insecticides in the mixed glues shall be:

Actellic: 0.50 %

9.2 Hazard Class H2

NOTE – Timber treated to this specification may only be sold in New Zealand as H1 treated timber or as untreated timber.

9.2.1

Where timber is used in interior situations which, because of intermittent wetting, may be exposed to a low decay hazard, or which may be subjected to termite attack.

9.2.2 *Typical uses*

Framing, flooring, used in dry or damp situations.

9.2.3 *Preservatives*

The following preservatives are approved for use in this Hazard Class:

9.2.3.1 *Waterborne preservatives*

CCA Class I

CCA Class II

9.2.3.2 *Light organic solvent preservatives*

9.2.3.2.1 *Fungicides*

TBTO

TBTN

9.2.3.2.2 *Termiticides*

Chlordane

Synthetic pyrethroids:

Permethrin

Cypermethrin

Deltamethrin

9.2.4 *Species*

Refer to Timber Preservation Quality Manual, Appendix 3 – "Schedule of timber species which may be treated".

9.2.5 *Penetration*

9.2.5.1

Complete sapwood penetration.

9.2.5.2

If the heartwood comprises less than 20 % of the cross section of the piece, does not extend through the piece from one surface to the opposite surface and does not exceed half the dimension of any side in the cross section, no heartwood penetration is required.

9.2.5.3

Any heartwood in excess of 20 % of the total cross section area in any piece must be penetrated to show a continuous and uniform envelope of treated timber to a depth of 5 mm.

9.2.6

Not less than 90 % of samples in any set shall comply with these requirements. Samples which fail the penetration test will be rejected from the set and will not undergo the analytical test.

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9.2.7 Retentions

9.2.7.1 Retention zone

The full sapwood cross section.

9.2.7.2 Minimum concentration of preservative in the retention zone

A minimum concentration of total active elements (CCA) or of the specified preservative components (LOSP), as set out below, is required in 90 % of samples. Samples which failed the penetration test will be deemed to have failed this requirement.

Minimum concentration percent mass/mass O.D. wood

CCA Class I and II	Total:	0.32
TBTO	Sn:	0.06
TBTN	Sn:	0.06
Termiticide additives to LOSP		
Chlordane:		0.18
Permethrin:		0.02
Cypermethrin:		0.03
Deltamethrin:		0.002

9.2.8 Branding

9.2.8.1

Branding of treated timber shall be in accordance with requirements of the New South Wales Timber Marketing Act 1977.

9.3 Hazard Class H3

9.3.1

Where timber may be exposed to the weather or used as exterior covering or joinery in buildings, but will not be in contact with the ground. Wherever possible, timber should be treated in its final size, shape and form, particularly that treated with LOSP.

Any wood exposed during subsequent cutting, boring or planing should be treated *in situ* with one of the preservatives recommended in 8.5.1.

9.3.2 Group A – Round, part round, or sawn timber

9.3.2.1 Typical uses

Fascia, radiata pine exterior joinery, verandah decking, gates, unpainted weatherboards, all vertical weatherboards, fence battens, fence palings, roof shingles, glue laminated beams.

The following commodities are not suitable for LOSP treatment:

Roof shingles and verandah decking

Weatherboards to be used unpainted are not suitable for LOSP treatment except with specially approved formulations (see 9.3.3.2).

9.3.3 Preservatives

The following preservatives are approved for use in this Hazard Class:

9.3.3.1 Waterborne preservatives

CCA Class I

CCA Class II

9.3.3.2 Light organic solvent preservatives

TBTO

TBTN

Specially approved formulation; Protim 235 W.R.

9.3.3.3 Oilborne preservatives

Creosote

Creosote/oil mixture

9.3.4 Species

Refer to Timber Preservation Quality Manual, Appendix 3 – "Schedule of timber species which may be treated".

9.3.5 Penetration

9.3.5.1

For timber treated in its final size, shape or profile and joinery that will be primed before leaving the treatment site.

CCA: Complete sapwood penetration in not less than 90 % of samples in a set.

LOSP: For timber up to 50 mm thick – complete sapwood.

For timber greater than 50 mm thick – 25 mm from each sapwood face.

For glue laminated beams – 10 mm.

Not less than 90 % of samples in any set shall comply with these requirements.

CREOSOTE, CREOSOTE/OIL MIXTURE: A minimum of 5 mm from any face plus (for pines) complete sapwood penetration in not less than 90 % of samples in a set.

9.3.5.2

For other timbers that will be re-cut or machined after treatment and for timber treated by processes not conforming to requirements of paragraph 9.3.7. The following shall apply:

Complete sapwood penetration.

If the heartwood comprises less than 20 % of the cross section of the piece, does not extend through the piece from one surface to the opposite surface and does not exceed half the dimension of any side in the cross section, no heartwood penetration is required.

Any heartwood in excess of 20 % of the total cross section area in any piece must be penetrated to show:

A continuous and uniform envelope of treated timber to a depth of 8 mm in sawn timber or 5 mm in machined timber.

9.3.5.3

Not less than 90 % of samples in any set shall comply with these requirements.

Samples which fail the penetration test will be rejected from the set and will not undergo the analytical test.

NOTE – Because there is no satisfactory spot test for tributyltin preservatives, compliance with this specification can only be established by chemical analysis of the treated timber.

9.3.6 Retentions

9.3.6.1 Retention zones

9.3.6.1.1 Sapwood

The outer 25 mm from any face, or the full depth of sapwood where sapwood depth is less than 25 mm. Where there is a fixed sapwood penetration depth requirement of 10 mm (LOSP treatment of glue laminated beams), all material within the 10 mm zone will be analysed.

9.3.6.1.2

Heartwood, where heartwood penetration is required

The outer 8 mm from any face in sawn timber and the outer 5 mm from any face in machined timber.

9.3.6.1.3 Creosote, creosote/oil mixtures

The outer 25 mm of sapwood with a minimum of 5 mm from any face.

9.3.6.2 Minimum concentration of preservative in the retention zone

9.3.6.2.1 CCA

A minimum concentration of total active elements, plus minimum concentrations of individual elements, as set out below, is required in 90 % of samples. Samples which failed the penetration test will be deemed to have failed this requirement.

Minimum concentration percent mass/mass O.D. wood

	CCA Class I	CCA Class II
Total:	0.37	0.40
Cu:	0.08	0.08
Cr:	0.16	0.10
As:	0.11	0.12

Full analysis will be required when the percentage of copper is:

CCA Class I	CCA Class II
0.08 – 0.09	0.08 – 0.10

9.3.6.2.2 *LOSP*

A minimum concentration of the specified preservative component, as set out below, is required in 90 % of samples.

Minimum concentration percent mass/mass O.D. wood

TBTO	Sn:	0.08
TBTN	Sn:	0.08

9.3.6.2.3 *Creosote, creosote/oil mixture*

A minimum concentration of creosote or creosote/oil mixture of 10 % mass/mass O.D. wood in not less than 90 % of samples. Samples which failed the penetration test will be deemed to have failed this requirement.

9.3.7 *Process requirements*

9.3.7.1

Where there are no heartwood penetration requirements in this Hazard Class, treatment processes used must be able to achieve heartwood penetration equivalent to that achieved by the following:

9.3.7.2 *CCA*

9.3.7.2.1

A treating pressure of 1400 kPa.

9.3.7.2.2

A pressure period that results in a solution absorption, over a ten minute period, which is less than 1 % of the gross absorption.

9.3.7.2.3

Fifteen cycles of APM treatment.

9.3.7.3 *LOSP*

9.3.7.3.1

A pressure differential of 70 kPa applied for 10 minutes.

9.3.8 *Branding*

9.3.8.1

Sawn treated timber shall be branded or otherwise identified on one end of each piece or within 150 mm of an end in accordance with section 6 of these specifications.

9.3.8.2

Machined, treated timber shall be branded or otherwise identified either on the end, or on a broad face within 150 mm of an end or repetitively along the length at 600 mm centres in accordance with section 6 of these specifications.

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9.3.9 Group B – Plywood

9.3.9.1 *Typical uses – external sheathing, bracing, decking and cladding*

Plywood treated with LOSP is not suitable for decking.

Plywood to be used as unpainted sheathing or cladding should not be treated with LOSP except with specially approved formulations (see 9.3.10.2).

9.3.10 *Preservatives*

The following preservatives are approved for use in this Hazard Class:

9.3.10.1 *Waterborne preservatives*

CCA Class I

CCA Class II

9.3.10.2 *Light organic solvent preservatives*

TBTO

TBTN

Specially approved formulation; Protim 235 W.R.

9.3.11 *Species*

Refer to Timber Preservation Quality Manual, Appendix 3 – "Schedule of timber species which may be treated".

9.3.12 *Penetration*

Face veneers shall be completely penetrated and there shall be evidence of preservative in each veneer in any cross section in not less than 90 % of samples in any set.

9.3.13 *Retentions*

9.3.13.1 *Retention zones*

The retention zone is a full cross section within a 200 mm x 50 mm sample cut parallel with the face grain, equidistant from both ends of the sheet between 150 mm and 200 mm from one edge.

9.3.13.2

Minimum concentration of preservative in the retention zone

9.3.13.3 *CCA*

A minimum concentration of total active elements plus minimum concentrations of individual elements, as set out below, is required in not less than 90 % of samples. Samples which failed the penetration test will be deemed to have failed this requirement.

Minimum concentration percent mass/mass O.D. wood

	CCA Class I	CCA Class II
Total :	0.37 %	0.40 %
Cu :	0.08 %	0.08 %
Cr :	0.16 %	0.10 %
As :	0.11 %	0.12 %

Full analyses will be required when the percentage of copper is:

CCA Class I	CCA Class II
0.08 – 0.09	0.08 – 0.10

9.3.13.4 LOSP

A minimum concentration of the specified preservative component, as set out below, is required in not less than 90 % of samples

Minimum concentration percent mass/mass O.D. wood

TBTO	Sn: 0.08
TBTN	Sn: 0.08

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9.4 Hazard Class H4

9.4.1

Where timber is used in contact with the ground, or in fresh water, or in other situations favourable to decay. Very severe environments such as some horticultural sites constitute a higher Hazard Class (H5) which should also be used for critical end uses such as timber for building foundations.

9.4.2 Group A – Round, part round, or sawn timber

9.4.2.1

Wherever possible, timber should be treated in its final size, shape, and form, but if subsequent cutting is unavoidable, cut surfaces should be clear of the ground and should be treated with one of the formulations shown in 8.5, *in situ* applications applied to wood exposed by the cutting of treated timber.

9.4.2.2 *Typical uses*

Fence posts, poles for barns or similar industrial use, sawn timber for bridges, wharf decking, fire escapes.

9.4.3 *Preservatives*

The following preservatives are approved for use in this Hazard Class:

9.4.3.1 *Waterborne preservatives*

CCA Class I

CCA Class II

9.4.3.2 *Oilborne preservatives*

Creosote

Creosote/oil mixture

9.4.4 *Species*

Refer to Timber Preservation Quality Manual, Appendix 3 – "Schedule of timber species which may be treated".

9.4.5 *Penetration*

9.4.5.1 *CCA*

9.4.5.1.1 *Sapwood*

Complete penetration, continuous through both earlywood and latewood, in not less than 90 % of samples in a set, in accordance with requirements in 9.4.5.1.3.

9.4.5.1.2 *Heartwood*

9.4.5.1.2.1

Continuous penetration through both earlywood and latewood in not less than 60 % of samples in a set, in accordance with requirements in 9.4.5.1.3.

9.4.5.1.2.2

Samples which fail the penetration test will be rejected from the set and will not undergo the analytical test.

9.4.5.1.3 *Specific penetration requirements*

Roundwood: Complete sapwood penetration with a minimum of 10 mm.

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Part rounds: Complete sapwood penetration with a minimum of 10 mm in both sapwood and heartwood. Unpenetrated heartwood will be permitted if it comprises less than one-third the original diameter.

Sawn timber: Complete sapwood penetration with a minimum of 10 mm in both sapwood and heartwood. Unpenetrated heartwood will be permitted if it comprises less than 20 % of the cross section of the piece, does not extend through the piece from one surface to the opposite surface and does not exceed half the dimension of any side of the cross section.

9.4.5.2 *Creosote, creosote/oil mixture*

9.4.5.2.1

A minimum of 10 mm from any face plus (for pine species) complete sapwood penetration in not less than 90 % of samples in a set.

9.4.6 *Retentions*

9.4.6.1 *Retention zones*

9.4.6.1.1 *CCA*

Sapwood:

The outer 25 mm, or the full sapwood depth when this is between 10 mm and 25 mm.

Heartwood:

The outer 10 mm.

9.4.6.1.2 *Creosote, creosote/oil mixture*

The outer 25 mm of sapwood with a minimum of 10 mm from any face.

9.4.6.2 *Minimum concentration of preservative in the retention zone*

9.4.6.2.1 *CCA*

A minimum concentration of total active elements plus a minimum concentration of individual elements, as set out below, is required in not less than 90 % of sapwood samples or not less than 60 % of heartwood samples. Samples which failed the penetration test will be deemed to have failed these requirements.

Minimum concentration percent mass/mass O.D. wood

	CCA Class I	CCA Class II
Total :	0.72 %	0.86 %
Cu :	0.16 %	0.17 %
Cr :	0.31 %	0.22 %
As :	0.22 %	0.26 %

Full analyses will be required when the percentage of copper is:

CCA Class I	CCA Class II
0.16 – 0.17	0.17 – 0.22

9.4.6.2.2 *Creosote, creosote/oil mixture*

A minimum concentration of creosote or creosote/oil mixture of 20 % mass/mass O.D. wood is required in not less than 90 % of sapwood samples or not less than 60 % of heartwood samples. Samples which failed the penetration test will be deemed to have failed these requirements.

9.4.7 *Branding*

9.4.7.1

Rounds, part rounds and sawn treated timber shall be branded or otherwise identified on one end of each piece or within 150 mm of an end in accordance with section 6 of these specifications.

9.4.7.2

Machined, treated timber shall be branded or otherwise identified either on the end, or on a broad face within 150 mm of an end or repetitively along the length at 600 mm centres in accordance with section 6 of these specifications.

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9.4.8 Group B – Plywood

9.4.8.1 Typical uses

Sheathing, races, bins, etc:

Plywood used for Treated Timber Frame Foundations (TTFF) (=All Weather Wood Foundations) is excluded from this group and must be treated to the requirements of Hazard Class H5.

9.4.9 Preservatives

The following preservatives are approved for use in this Hazard Class:

9.4.9.1 Waterborne preservatives

CCA Class I

CCA Class II

9.4.10 Species

Refer to Timber Preservation Quality Manual, Appendix 3 – "Schedule of timber species which may be treated".

9.4.11 Penetration

Outer veneers shall be completely penetrated and there shall be evidence of preservative in each veneer of any cross section of a panel.

9.4.12 Retentions

9.4.12.1 Retention zones

The retention zone is a full cross section within a 200 mm x 50 mm sample cut parallel with the face grain, equidistant from both ends of the sheet between 150 mm and 200 mm from one edge.

9.4.12.2 Minimum concentration of preservative in the retention zone

A minimum concentration of total active elements plus minimum concentrations of individual elements is required in 90 % of samples. Samples which failed the penetration test will be deemed to have failed this requirement.

Minimum concentration percent mass/mass O.D. wood

	CCA Class I	CCA Class II
Total :	0.72 %	0.86 %
Cu :	0.16 %	0.17 %
Cr :	0.31 %	0.22 %
As :	0.22 %	0.26 %

Full analyses will be required when the percentage of copper is:

CCA Class I	CCA Class II
0.16 – 0.17	0.17 – 0.22

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9.5 Hazard Class H5

9.5.1

Where timber is in contact with the ground and where climate, soil, or other factors present an extreme decay hazard, or, where the commodity's critical use requires additional protection.

9.5.2 Group A – Round poles

9.5.2.1 *Typical uses*

Transmission poles for power or telecommunications.

9.5.3 *Preservatives*

The following preservatives are approved for use in this Hazard Class:

9.5.3.1 *Waterborne preservatives*

CCA Class I

CCA Class II

9.5.3.2 *Oilborne preservatives*

Creosote

Creosote/oil mixture

9.5.4 *Species*

Refer to Timber Preservation Quality Manual, Appendix 3 – "Schedule of timber species which may be treated".

9.5.5 *Penetration*

9.5.5.1 *CCA*

Complete sapwood penetration is required, continuous through both earlywood and latewood, in not less than 90 % of samples in a set.

9.5.5.2 *Creosote, creosote/oil mixture*

A minimum of 10 mm from any face plus (for pine species) complete sapwood penetration in not less than 90 % of samples in a set.

9.5.5.3

Samples which fail the penetration test will be rejected from the set and will not undergo the analytical test.

9.5.6 *Retentions*

9.5.6.1 *Retention zones*

9.5.6.1.1 *CCA*

Pine species:	the outer 30 mm
Hardwood species Durability Class I:	the outer 10 mm
Hardwood species Durability Class II:	the outer 20 mm

9.5.6.1.2 *Creosote, creosote/oil mixture*

A minimum concentration of creosote or creosote/oil mixture of 25 % mass/mass O.D. wood in not less than 90 % of samples. Samples which failed the penetration test will be deemed to have failed this requirement.

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9.5.6.2 Minimum concentration of preservative in the retention zone

A minimum concentration of total active elements plus minimum concentrations of individual elements is required in not less than 90 % of samples. Samples which failed the penetration test will be deemed to have failed this requirement.

Minimum concentration percent mass/mass O.D. wood

Pine species			Hardwood species	
	CCA Class I	CCA Class II	CCA Class I	CCA Class II
Total:	0.95	1.24	1.73	2.00
Cu :	0.22	0.25	0.40	0.46
Cr :	0.41	0.31	0.75	0.70
As :	0.29	0.37	0.53	0.60

Full analyses will be required when the percentage of copper is:

Pine species		Hardwood species	
CCA Class I	CCA Class II	CCA Class I	CCA Class II
0.22 – 0.23	0.25 – 0.32	0.40 – 0.42	0.46 – 0.58

9.5.7 Branding

9.5.7.1

Roundwood shall be branded or otherwise identified on one end of each piece or within 150 mm of an end in accordance with section 6 of these specifications.

9.5.8 Group B – Round, part round, or sawn timber used for building foundations or supports

NOTE – Specific approval from the Council is required for producers of sawn foundation piles treated to this specification.

9.5.8.1 Typical uses

Poles, piles and timber used for building foundations (except for poles for barns of similar industrial uses).

9.5.8.1.1 Precautions

Piles MUST be treated in their standard length and form and must not be re-sized after treatment. Certain provisions for the handling and use of treated poles are described in 4.1.3 (p. 10). In addition, any wood exposed by unavoidable cutting or shaping during installation should have an *in situ* application of one of the formulations shown in section 8.6.

9.5.9 Preservatives

The following preservatives are approved for use in this Hazard Class:

9.5.9.1 Waterborne preservatives

CCA Class I

CCA Class II

9.5.10 Species

Refer to Timber Preservation Quality Manual, Appendix 3 – "Schedule of timber species which may be treated".

9.5.11 Penetration

9.5.11.1

Complete sapwood penetration, continuous through both earlywood and latewood, plus a minimum of 30 mm penetration from three sawn faces and a minimum of 20 mm from the other sawn face, in not less than 90 % of samples in a set.

9.5.11.2

Samples which fail the penetration test will be rejected from the set and will not undergo the analytical test.

9.5.12 Retentions

9.5.12.1 Retention zones

The outer 30 mm of a sample. With sawn timber, this may be taken from any face.

9.5.13 Minimum concentration of preservative in the retention zone

A minimum concentration of total active elements plus minimum concentrations of individual elements is required in not less than 90 % of samples. Samples which failed the penetration test will be deemed to have failed this requirement.

Minimum concentration percent mass/mass O.D. wood

	CCA Class I	CCA Class II
Total:	0.95	1.24
Cu :	0.22	0.25
Cr :	0.41	0.31
As :	0.29	0.37

MP 3640:1992

Full analyses will be required when the percentage of copper is:

CCA Class I	CCA Class II
0.22 – 0.23	0.25 – 0.32

9.5.14 *Branding*

9.5.14.1

Rounds, part rounds and sawn treated timber shall be branded or otherwise identified in accordance with section 6 of these specifications (see 6.4.1.8).

9.5.15 Group C – Round, part round, or sawn timber used for horticultural support or shelter on very severe hazard sites

9.5.15.1 *Typical uses*

- (a) Horticultural poles (round or part round poles 3.6 m or greater in length).
- (b) Horticultural posts (round, part round, or sawn posts less than 3.6 m long).

9.5.16 *Preservatives*

The following preservatives are approved for use in this Hazard Class:

9.5.16.1 *Waterborne preservatives*

CCA Class I

CCA Class II

9.5.17 *Species*

Refer to Timber Preservation Quality Manual, Appendix 3 – "Schedule of timber species which may be treated".

9.5.18 *Penetration*

9.5.18.1

Penetration shall be continuous through both earlywood and latewood and not less than 90 % of samples in a set shall meet the following requirements:

- (a) Poles. Complete sapwood penetration with a minimum depth of 30 mm.
- (b) Posts. Complete sapwood penetration plus a minimum of 10 mm from each sawn face.

9.5.18.2

Unpenetrated heartwood will be permitted if it comprises less than 20 % of the cross section of the piece, does not extend through the piece from one surface to the opposite surface and does not exceed half the dimensions of any side of the cross section.

9.5.18.3

Samples which fail the penetration test will be rejected from the set and will not undergo the analytical test.

9.5.19 *Retentions*

9.5.19.1 *Retention zones*

Poles: The outer 30 mm from any surface

Posts: The outer 10 mm from any surface

9.5.19.2 *Minimum concentration of preservative in the retention zone*

A minimum concentration of total active elements plus minimum concentrations of individual elements is required in not less than 90 % of samples. Samples which failed the penetration test will be deemed to have failed this requirement.

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Minimum concentration percent mass/mass O.D. wood

	CCA Class I	CCA Class II
Total :	0.95	1.24
Cu :	0.22	0.25
Cr :	0.41	0.31
As :	0.29	0.37

Full analyses will be required when the percentage of copper is:

CCA Class I	CCA Class II
0.22 – 0.23	0.25 – 0.32

9.5.20 Branding

9.5.20.1

Rounds, part rounds and sawn treated timber shall be branded or otherwise identified on one end of each piece or within 150 mm of an end in accordance with section 6 of these specifications.

9.5.21 Group D – Plywood

9.5.21.1

Typical uses

Plywood for use in ground contact in Treated Timber Frame Foundations (TTFF) (All weather wood foundations).

9.5.22 Preservatives

The following preservatives are approved for use in this Hazard Class:

9.5.22.1 Waterborne preservatives

CCA Class I

CCA Class II

9.5.23 Species

Refer to Timber Preservative Quality Manual, Appendix 3 – "Schedule of timber species which may be treated".

9.5.24 Penetration

9.5.24.1

3 ply: Complete penetration in 90 % of samples tested.

5 ply: Outer 2 veneers from each face shall be completely penetrated and there shall be evidence of preservative in central veneer in 90 % of samples tested.

9.5.24.2

Samples which fail the penetration test will be rejected from the set and will not undergo the analytical test.

9.5.25 Retentions

9.5.25.1 Retention zone

The retention zone is a full cross section within a 200 mm x 50 mm sample cut parallel with the face grain, equidistant from both ends of the sheet between 150 mm and 200 mm from one edge.

9.5.25.2 Minimum concentration of preservative in the retention zone

A minimum concentration of Total Active Elements plus minimum concentrations of individual elements is required in not less than 90 % of samples. Samples which failed the penetration test will be deemed to have failed this requirement.

Minimum concentration percent mass/mass O.D. mass

	CCA Class I	CCA Class II
Total :	0.95	1.24
Cu :	0.22	0.25
Cr :	0.41	0.31
As :	0.29	0.37

Full analyses will be required when the percentage of copper is:

CCA Class I	CCA Class II
0.22 – 0.23	0.25 – 0.32

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9.6 Hazard Class H6

9.6.1

Roundwood and sawn timber subjected to prolonged immersion in sea water.

9.6.1.1 *Typical uses*

Marine piles used as supports or fenders, sawn timber for bracing.

9.6.2

Preservatives

The following preservatives are approved for use in this Hazard Class:

9.6.2.1 *Waterborne preservatives*

CCA Class I

CCA Class II

9.6.3 *Species*

Refer to Timber Preservation Quality Manual, Appendix 3 – "Schedule of timber species which may be treated".

9.6.3.1

Treatment by processes including steaming as part of the treatment process is restricted to radiata and Corsican pine.

9.6.3.2

Because of difficulty in obtaining the required penetration and retention in heartwood, care should be taken in selecting predominantly sapwood for treatment to this specification.

9.6.4 *Penetration*

Complete sapwood penetration, continuous through both earlywood and latewood, with a minimum of 40 mm penetration from any face in not less than 90 % of samples in a set.

Samples which fail the penetration test will be rejected from the set and will not undergo the analytical test.

9.6.5 *Retentions*

9.6.5.1 *Retention zones*

The outer 40 mm of the sample. With sawn timber, this may be taken from any face.

9.6.5.2 *Minimum concentration of preservative in the retention zone*

A minimum concentration of copper is required in not less than 90 % of samples. Samples which failed the penetration test will be deemed to have failed this requirement.

Minimum concentration percent mass/mass O.D. wood

	CCA Class I	CCA Class II
Cu :	0.40	0.40

9.6.6 *Branding*

9.6.6.1

Roundwood and sawn treated timber shall be branded or otherwise identified on one end of each piece or within 150 mm of an end in accordance with section 6 of these specifications.

APPENDIX A
SCHEDULE OF TRADE NAMES OF APPROVED COMMERCIAL WOOD PRESERVATIVES

A1 CCA preservatives

A1.1 CCA Class I

Sarmix 3
Impretect C
Impretect C (oxide)
Protim CCA
Tanalith C
Tanalith C (oxide)

A1.2 CCA Class II

Tanalith NCA

A2 Boron compounds

Brybor
Diffusol
F-bor
Timbor

A3 Synthetic pyrethroids

Protim LCWR

A4 Light organic solvent preservatives

A4.1 TBTO

Protim 95 DWR
Protim 95 WR
Vacsol Clear
Vacsol Clear E

A4.2 TBTN

Protim 235 (concentrate 5)

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