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The restoration, preservation and coating experts

Borates - An Overview

Borates are an effective anti-fungal agent and pesticide designed for application to wood and concrete. In British Columbia they are widely used as remedial treatments in the 'leaky condo' problem as well as a preventative treatment for 'at-risk' wood. They are available in a number of forms - liquid, called Pre-Ser-Vor 25-3/Pre-Ser-Vor 25-3, Tim-Bor powder and solid fused rods called Cobra Rods and others. Detailed information on the use and application of these products is in the accompanying pages. Consult Material Safety Data Sheets and the product label before using these products.

Borates are unique in that they are a wood preservative which may be easily and safely applied to the non-habitable portions of dwellings (framing, wall cavities, attics, crawl spaces, etc.), unlike more commonly available products such as Copper Naphthenate or Zinc Naphthenate **which are not approved for use in dwellings**. They are also much more environmentally friendly than Chromated Copper Arsenic (CCA), and do not have the same toxic emissions from wood dust or when burned.

Borates have the following properties:

- ✍ Wide spectrum of anti-fungal and pesticidal activities
- ✍ Very low mammalian toxicity
- ✍ Practically odourless
- ✍ Low vapor pressure (Non-fuming)
- ✍ Non staining
- ✍ Water soluble
- ✍ Non flammable
- ✍ Liquid forms are tintable with water based dyes and inks

**Pre-Ser-Vor 25-3, Tim-Bor and Cobra Rods® are distributed by
Canadian Building Restoration Products Inc.**



Specifying Borates

In past years, specifying Borates was a fairly simple process, as the number of products available was limited to one liquid form and one solid form. This made the specification process simple, but led to high prices and limited competition.

Recently a large number of new products have become available. There are now at least 3 liquid forms, 2 solid forms and a paste product available in the Canadian marketplace. All of these products use the same active ingredient, Disodium Octaborate Tetrahydrate. In addition, research being conducted by Forintek and development being undertaken by new Canadian based firms hold the prospect of an even greater range of products being available in the future.

The new products have a number of advantages over existing products and although each product is different and the advantages vary they will include one or more of the following:

- ✍ Lower Cost
- ✍ Less stringent PMRA regulations
- ✍ Improved leach resistance
- ✍ Improved penetration into the wood

Because of the range of products available, **specifying by product name or brand name should be avoided**. Instead, it would be more appropriate to specify by a loading standard of active ingredient into the wood being treated.



Borate Loading Standards in Wood

Research supported industry standards for Borate loading are generally defined as follows:

- ⌘ For Prevention - .2% BAE (Boric Acid Equivalent)
- ⌘ For Eradication - .5% BAE

A general definition of “Prevention” would be application to new wood which has not been exposed to Fungal or Insect attack, and which will not be placed against or near wood which has been exposed to such attack.

A general definition of ‘Eradication’ would be application to wood which has been exposed to Fungal or Insect attack, but which is still structurally sound to a degree acceptable to the Engineering, Architectural or Building Envelope firm specifying any necessary remedial treatment.

Using as a basis for calculation that Douglas Fir weighs 420 Kg / Cubic Meter, we can determine the following:

	Metric	English
Wood Weight	420Kg/M ³	26.17Lb/Ft ³
For .2% (Prevention) BAE Requirement	.84Kg/M ³	.053Lb/Ft ³
For .5% (Eradication) BAE Requirement	2.1Kg/M ³	.134Lb/Ft ³

The manufacturer of Pre-Ser-Vor 25-3 states that when applied as labeled, a single application will load the wood to .24Lb/Ft³ BAE to a depth of ¾ of an inch (3.76Kg/M³), which is just under twice the loading requirement to meet the BAE eradicant standard. This loading claim is based upon research done by US Borax, the supplier or the active ingredient.

The loading claim assumes the following:

- ⌘ the application is being done to dimensional (“2X”) lumber
- ⌘ application is made to both ‘face’ surfaces

In reality, application to both face surfaces may not always be possible. In such situations it may be desirable to treat the accessible areas or exposed lumber twice. As a standard industry practice, treatment of sides is quite common and recommended but was not considered in the US Borax studies.



Pre-Ser-Vor 25-3 Inorganic Boron Wood Preservative

INTRODUCTION:

Pre-Ser-Vor 25-3 is available in Canada in the following formulation

Formula	Active Ingredient	Concentration
25-3	Disodium Octaborate Tetrahydrate (DOT)	25.31%

Pre-Ser-Vor 25-3 is approved for remedial treatment of wood destroying organisms, preventative treatment of wood in existing structures, and pre-treatment of wood during construction.

CHARACTERISTICS:

- ✍ Very low mammalian toxicity
- ✍ Very low vapour pressure (Negligible loss of active ingredient by evaporation)
- ✍ Deep penetration into timber, even penetrates heartwood
- ✍ Practically odourless and non-staining
- ✍ Non-flammable
- ✍ Wider spectrum of activity than conventional preservatives

DESCRIPTION:

PRE-SER-VOR 25-3 is a clear solution of 25.31% Disodium Octaborate Tetrahydrate in propylene and polyethylene glycol. It is designed for use as a surface treatment on in-situ building material to eradicate fungal attack and preserve against attack from both fungus and wood boring insects. It penetrates $\frac{3}{4}$ " into the wood and establishes a reserve from which further penetration takes place.

USES:

As a surface treatment to eradicate brown rot, wet rot and white rot on in-situ building material.
As a surface treatment to preserve existing and new timbers against fungal and insect attack.

EXAMPLES OF PREPARATION:

- ✍ **Roof Timbers**
Surface debris, dust and cobwebs must be removed and timbers thoroughly cleaned using an industrial vacuum cleaner. Insulation must be removed, water tanks and electrical junctions covered, ventilation ensured and common roof voids screened. Walking boards and safety lights should be installed.
- ✍ **Floor Timbers**
Floor coverings must be carefully removed, timbers thoroughly vacuumed and sufficient access boards removed. Ventilation must be ensured without affecting adjacent areas with overspray.
- ✍ **Joinery**
Painted architraves and skirtages must be removed or pried away from the wall and the unpainted surfaces cleaned.



APPLICATION:

PRE-SER-VOR 25-3 may be applied by brushing, dipping, spraying to refusal, or by injection.

☞ Coverage

1 US Gallon to approximately 400 square feet of surface area. (If fungi or insects have already attacked the wood it may absorb more.)

☞ Cleaning

Ordinary tap water will clean the tools, equipment, and spillage.

☞ Packaging

1, 2.5, and 5 U.S. Gallon containers.

☞ Storage

Keep out of reach of children. Store in original containers, tightly closed and in a safe place. Keep away from food, drink and animal foodstuffs.

HEALTH AND SAFETY:

PRE-SER-VOR 25-3 is registered under the Pest Control Products Act, Registration Number 25662 for use as a wood preservative. For domestic or commercial use.

Acute Oral LD50 Oral Rats mg/kg >2,000

Acute Dermal LD50 Rats mg/kg >2,000

Acute LC50 Inhalation g/m³ >4.3 g/m³

(for a product containing ethylenglycol instead of propyleneglycol)

Skin Irritation Non-irritating

Eye Irritation Non-irritating

Skin Sensitization Negative in the Guinea Pig Maximization Test



A Comparison of Pre-Ser-Vor 25-3 and Boracol 20-2

	Pre-Ser-Vor 25-3	Boracol 20-2
Active Ingredient (Disodium Octaborate Tetrahydrate)	25.3%	19.6%
PMRA Rating	Domestic	Commercial
Acceptable dilution	1:1	None
Carriers	Propylene Glycol Polyethylene Glycol	Propylene Glycol Water

Discussion:

Active Ingredient:

Pre-Ser-Vor 25-3 and Boracol 20-2 both use the same active ingredient for the protection of wood from insect and fungal damage (Disodium Octaborate, Tetrahydrate). Pre-Ser-Vor 25-3 contains just over 28% more active ingredient.

PMRA Rating:

Pre-Ser-Vor 25-3 has a Domestic rating. Boracol 20-2 has a Commercial rating. This is a significant distinction, but especially so in British Columbia. The exact PMRA definitions are as follows: (source: Pest Control Products Registration Handbook, Part 6, Section 6.1)

DOMESTIC

This is the classification for products marketed to consumers for use in and around a dwelling. The Intent of the DOMESTIC classification is to provide consumers with relatively safe products for such uses as, insect and rodent control within the home, weed control in lawns and gardens, and swimming pool disinfection.

COMMERCIAL

This is the classification for products marketed for general use in the commercial activities specified on the label. More descriptive words such as AGRICULTURAL or INDUSTRIAL may also be used. The intent of the COMMERCIAL classification is to provide operators engaged in farming or commercial pest control operations with products that can be used safely and efficaciously in their particular business.

In British Columbia the Ministry of Environment, Lands and Parks has regulations in addition to those imposed by the PMRA, primarily relating to sales and storage. The Ministry of Environment requires that each sale of a 'Commercial' rated product be recorded in a Reportable Pesticide Purchase Register and requires special storage requirements. 'Domestic' rated products are considered Non-Reportable, and have relatively more relaxed storage standards. However under both classifications there still exists a responsibility to follow a number of additional regulations, including, but not limited to:

- ✍ Storage separate from food
- ✍ Use Permits on some types of land (public, forestry, etc.)
- ✍ Service License on fee-for-service applications



- ✍ Dispenser Certificate to sell
- ✍ Vendor License to sell.

Full details are available from the B.C. Ministry of Environment Pesticide Management Offices. In the Lower Mainland call 582-5200.

Dilution:

It is permissible and required to dilute Pre-Ser-Vor 25-3 1:1 with water prior to application. Pre-Ser-Vor 25-3 does not contain any water as it is delivered in the container (beyond a nominal amount which the active ingredient may have absorbed from atmospheric humidity during storage prior to manufacture). Thus, one gallon of Pre-Ser-Vor 25-3 will make 2 gallons of product for application.

Boracol 20-2 may not be diluted. It is delivered in a Propylene Glycol and water solution, in effect it has already been water reduced. Therefore, one gallon will simply make one gallon for application.



The information below is accurate at the time of publication. It does not express or imply a warranty.

Outperforming all the others

- ⌘ CobraRods will significantly extend the service life of all types of wood, including wood poles. This highly concentrated glass rod outperforms by a factor of 2 to 1 all other liquid water-soluble wood preservatives, which tend to leach rapidly.
- ⌘ CobraRods also control pole-top rot and cross-arm rot.
- ⌘ CobraRod's active ingredients are internationally recognized and approved as preservatives by CWPA, AWPA and BWPA.

We've got the right stuff

- ⌘ CobraRod's borates are considered one of the chemical groups effective in controlling and stopping fungal decay and many insects – at concentrations that are not even close to poisonous for humans and other mammals.
- ⌘ CobraRods have a unique combination of active ingredients which, unlike all others, give protection against both fungal families, basidiomycetes and ascomycetes.
- ⌘ CobraRods activate at 23% to 30% moisture levels, the same levels at which decay begins in wood.

Easy Installation

CobraRods are manufactured in sizes less than ½" in diameter and applied in drilling patterns that preserve pole strength. CobraRods are clean to handle, leaving no chalky residue on hands or clothing. They also resist breakage. Manufacturer's recommendations and PMRA/EPA label directions guide the installation of the rods. In brief, the steps are:

- ⌘ drill the least diameter possible hole to accommodate pre-determined number and diameter of CobraRods
- ⌘ insert suitable size and number of rods
- ⌘ seal holes with treated plug

Cobra™ Rod



⌘ Cobra™ Rods are a safe, low cost, Environmental Protection Agency (EPA US) and Pest Management Regulatory Agency (PMRA Canada) approved decay protection and prevention system for wood. These greenish teal glass like rods are specifically designed for all your internal pole treatment application needs.

⌘ Cobra™ Rods are comprised primarily of three internationally recognized highly effective water-diffusable wood preservatives, Anhydrous Disodium Octoborate, Copper Oxide and Boric Acid. It effectively controls fungal decay, and many other wood-boring insects.

⌘ The Cobra™ Rod is considered both a fungicide and insecticide.

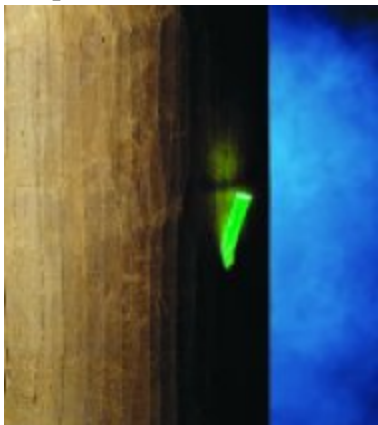
⌘ Cobra™ Rods exceed the longevity of all other water-diffusable rods by a factor of 3 to 1.



- ⌘ The Borate/Copper complex which is formed during manufacturing is highly effective, user friendly and more environmentally acceptable than traditional toxic alternatives, such as fumigants.
- ⌘ Yet as safe as these two actives are, the Copper Borates are highly effective in controlling and stopping fungal decay and many insects at concentrations that are not even close to reaching poisonous levels to humans and other mammals.
- ⌘ Seasoning checks in utility poles can expose unprotected heartwood and sapwood. Decay begins in these unprotected areas as adequate levels of moisture, food (unprotected wood), oxygen and temperature comes into balance. Once decay begins, these areas become favorable sites for insect establishment.
- ⌘ Cobra™ Rods are manufactured and applied in a manner that avoids causing strength loss to occur in wood due to drilling patterns and size of application zone holes.
- ⌘ Cobra™ Rods begin to activate at 23% to 30% moisture levels, the same levels at which decay begins and thrives in wood and a thus a favorable environment for insects exists.
- ⌘ Cobra™ Rods will control existing decay and prevent its imminent growth.
 1. Drill a ½ inch diameter hole to accommodate pre-determined number of Cobra™ Rods. Larger treatment holes can effect the integral strength of the utility pole.
 2. Insert the suitable number of Cobra™ Rods to assure that the recommended toxic threshold will be established for the effective treatment of the specific pole size
 3. Seal holes with a treated plastic, reusable plug so that re-treatment can be easily done upon the next treatment cycle.

Several drilling patterns are recommended depending on the application, however, application should follow the manufacturer's recommendations and PMRA / EPA label directions.

- ⌘ Where above ground Moisture Content is sufficient for diffusion, Cobra™ Rods will eradicate existing decay and prevent future growth.
- ⌘ Cobra™ Rods will significantly extend the service life of all types of wood utility poles. This highly concentrated glass like rod outperforms all other liquid water-soluble wood preservatives, which tend to rapidly leach from wood.



- ⌘ Borates contained in the Cobra™ Rod are considered, as being one of the safest known chemical groups available for wood preservation today. Due to the low toxicity of these rods and their high effectiveness, they are fast becoming the preservatives of choice to the highly toxic, corrosive and applicator unfriendly alternatives.

- ⌘ Cobra™ Rod can remain effective over an 8 to 10 year period, which matches many utilities maintenance cycles.

- ⌘ The patented formulation and manufacturing process delivers high quality results:

- ⌘ Cobra™ Rod are safe to handle and do not hydrolyze like many of its competitors leaving a chalky substance on the hands and skin.

- ⌘ Cobra™ Rod are durable and breakage is greatly reduced when compared to other solid water diffusible rods.
- ⌘ Cobra™ Rod have a unique combination of actives, which unlike all others gives protection against both fungal families basidiomycetes and ascomycetes. (key feature of the Cobra™ Rod over the Boron Rod offering)



- ☞ Cobra™ Rod are also used to control pole top rot and crossarm rot.
- ☞ Cobra™ Rod are manufactured for wood poles in ½ inch diameters so installation can be performed minimizing loss of pole strength. As the required hole size increases so does the loss of structural strength.
- ☞ Cobra™ Rod make use of the initial treating holes thus eliminating the use of additional holes for next treatment cycle.
- ☞ Cobra™ Rod actives are internationally recognized and American Wood Preservation Association (AWPA), British Wood Preservative Preservation Association (BWPA), Canadian Wood Preservation Association (CWPA) approved preservatives.

Efficacy Data

For a more complete review of Cobra products see Evaluation of Cobra™ Wood Preservative Rods by Powertech Labs Inc. (Refer to complete document in Efficacy Data Cobra™ Rod) This study concluded that fusion of boron and copper in the Cobra rod formulation is more effective than boron for two important reasons:

- ☞ boron is more effective against basidiomycetes (hollow heart), (effect inside of pole) and insects; copper protects outer wood surfaces against soft-rot fungi—together they cover the broader spectrum
- ☞ boron fused to copper enhances the mobility of copper within the wood; copper reduces the rate of leaching of boron out of the pole—this prolongs the effective life of the boron. This latter point is particularly important in wetter sites where boron will, otherwise, leach quite rapidly. According to the study performed by Dennis Cartlidge of Powertech Labs, Cobra™ Rod have 3 times the effective life of competing wood preservative rods. (see Attachment III)

Labels

Cobra™ Rod

Canada patent filed April 29, 1996 under Michael Wall & Sons Enterprises Ltd.

Label: PMRA (Canada) no. 25580 granted to Genics Can Inc.

TECHNICAL ADVISORY SERVICE:

Before determining the most appropriate product it is necessary to specifically identify the source of the problem so that the best method of treatment can be applied. Technical advice of this nature is available from Canadian Building Restorations Products, however the final determination must come from a qualified Structural Engineer or Architect.

This information is given in good faith is based on many years experience and usage of similar products. However, all recommendations and suggestions are made without prejudice, since the conditions of use are beyond our control. All goods are sold in accordance with our conditions of sale, copies of which are available upon request.

Examples:

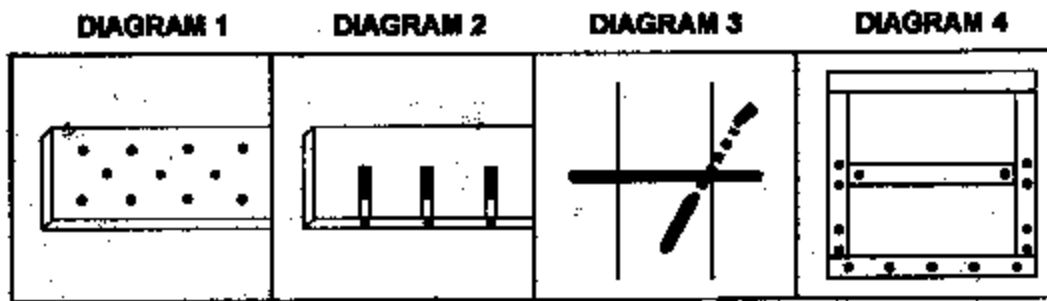
Rod Diameter (approx.)	Rod Length (approx.)	Rod Weight (approx.)	Corresponding to cm3 of wood (max.)	Predrilling (wood drill)
1/4 "	1/2 "	3.5 grams	750	5/16"
1/3 "	1 "	7.0 grams	2000	3/8"
1/2 "	2 "	24 grams	6000	9/16"
3/4 "	3 "	40 grams	10000	13/16"



Recommended Rod sizes and spacing for various wood dimensions

Nominal Size	Actual Size	Rod Size (dia" X length")	Hole Size (dia" x depth")	Linear Space Between Holes	No. of Rods Per Hole
2" x 4 "	1 1/2" x 3 1/2"	7/16" x 2"	1/2" x 2 1/4"	10"	1
2" x 6 "	1 1/2" x 5 1/2"	7/16" x 2"	1/2" x 3 3/4"	10"	1
2" x 8 "	1 1/2" x 7 1/4"	7/16" x 2"	1/2" x 4 1/2"	12"	1
2" x 10 "	1 1/2" x 9 1/4"	7/16" x 2"	1/2" x 5 1/2"	12"	1
2" x 12 "	1 1/2" x 11 1/4"	7/16" x 2"	1/2" x 6 1/2"	10"	1
4" x 4 "	3 1/2" x 3 1/2"	7/16" x 2"	1/2" x 2 3/4"	14"	1
4" x 6 "	3 1/2" x 5 1/2"	7/16" x 2"	1/2" x 3 3/4"	9"	1
4" x 8 "	3 1/2" x 7 1/2"	7/16" x 2"	1/2" x 4 3/4"	6"	1
4" x 12 "	1 1/2" x 11 1/2"	7/16" x 2"	1/2" x 7 1/4"	13"	3
6" x 6 "	5 1/2" x 5 1/2"	7/16" x 2"	1/2" x 3 3/4"	6"	1
6" x 8 "	5 1/2" x 7 1/2"	7/16" x 2"	1/2" x 5 3/4"	8"	2

How to position Rods in Wood



Staggered
Drill
Pattern

Linear
Drill
Pattern

Angled
Drill
Pattern

Millwork
Drill
Pattern

Caution: When drilling into structural support members such as joists, consult your local building code authority and a Structural Engineer for restrictions. Extensive drilling could result in structural weakening.



Guardian

FEATURES AND STATISTICS

A highly concentrated borate-based insecticide, fungicide and wood preservative paste for application during new construction or drill-inject.

- ✍ A remedial or preventive treatment
- ✍ Contains no Ethylene Glycol
- ✍ PMRA-registered.
- ✍ Economical alternative to IMPEL Rods.
- ✍ Will not colour wood.

Shelf Life	1 year
Application Temperature	40° to 90°
Application Methods	Caulking Bead Drill and Inject
Surface Preparation	Clean and Dry Bare wood Drilled holes
Frequency	Permanent in wood that is kept sealed
# of Coats	1 bead application
Drying Time	Not applicable

GUARDIAN application when substituting for COBRA or IMPEL RODS

One 3/4 x 3 rod is 2.03 oz BAE

One 1/2 x 2 rod is 0.60 oz BAE

1 tube GUARDIAN is 1.27# BAE or 20.3 oz BAE

1 tube GUARDIAN is equivalent to 10 (3/4 x 3) rods

1 tube GUARDIAN is equivalent to 34 (1/2 X 2) rods

30 fl oz = 54.14 cubic inches. Therefore, GUARDIAN is .37 oz. BAE per cubic inch

For BAE=2.03 oz, we need 5.41 cubic inches of GUARDIAN (1 rod BAE = 5.41 cubic in of GUARDIAN) So, to replace the BAE for 1 (3/4 x 3) rod, drill holes of the following depth (add an allowance for depth of plug!)

Hole Diam	Hole Depth
3/4	12
1	6 7/8
1 1/2	3
1 3/4	2
2	1 3/4

For BAE=0.60 oz, we need 1.62 cubic inches of GUARDIAN (1 rod BAE = 1.62 cubic in of GUARDIAN) To replace the BAE for 1 (1/2 x 2) rod, drill holes of the following depth (add an allowance for depth of plug!)



Hole Diam	Hole Depth
3/8	14 5/8
1/2	8 1/4
3/4	3 5/8
1	2

Supplemental instructions for treatment of full volume of wood in round timbers. **Note:** Instructions on GUARDIAN tube are calculated to apply .24 pounds Boric Acid. Equivalent (BAE) in the outer 3/4 inch of the wood being treated. If treatment of the full volume of wood is desired, the following table is to be used.

APPLICATION METHOD:

- Using the table below, select the diameter and depth of holes to be drilled.
- Drill 4 of the proper size holes in each lineal foot of timber to be treated.
 Table allows 1/2 inch depth for plug installed after GUARDIAN injection
 Holes can be drilled at angles or in radial or linear pattern, as desired.
- Fill the hole with GUARDIAN.
- Plug the opening with 1/2 inch deep wood plug, caulking or other appropriate filler.

NOTE: Drill patterns and hole sizes may affect pole strength. If structural members are subjected to high loads, consult a qualified structural engineer with your specific requirements and drill patterns to ensure that limits are not exceeded.

DEPTH OF DRILLED HOLE:

		HOLE DIAMETER (INCHES):						LINEAL FEET PER TUBE
		1/2	3/4	1	1 1/2	1 3/4	2	
D I I P A N O M C L E H E T E S R	6	3 1/4						24.4
	8	5 1/4	2 1/2				Not Recommended	13.7
	10	8	3 3/4					8.8
	12		5 1/4	3 1/4				6.1
	14		7	4 1/4				4.5
	16		9	5 1/4				3.4
	18		11 1/4	6 1/2	3 1/4			2.7
	20		13 3/4	8	3 3/4			2.2
	22			9 1/2	4 1/2	3 1/2		1.8
	24		Not Recommended	11 1/4	5 1/4	4		1.5
	26			13	6	4 1/2	3 3/4	1.3
	28			15	7	5 1/4	4 1/4	1.1
30		17 1/4		8	6	4 3/4	1.0	



Tim-bor®

Tim-bor® is a 98% disodium octaborate tetrahydrate powder formula. This excellent product is a water soluble inorganic borate salt with insecticide and fungicide properties. Tim-bor can be applied as a solution, foam or dust for wood treatment against wood destroying organisms. Ideal for eliminating mold and wood decay fungi, Tim-bor is also an excellent product to use for drywood termite prevention.

APPLICATION TABLE FOR WOOD DESTROYING INSECTS

Preconstruction Pretreatments

- ✍ primary treatment for subterranean termites in new home construction.

NOT APPLICABLE

- ✍ use in wood with contact with the ground

Post Construction Treatments

- ✍ for active infestations of all termite species as primary treatments
- ✍ may be used in conjunction with baits, soil treatments and other control methods.
- ✍ preventive for subterranean termites if all wood is treated and used in conjunction with other applications
- ✍ wood in contact with the ground, window sills, wet wood or sealed wood
- ✍ all termite species except drywood termites

Borate Foaming

- ✍ may be used as primary for active infestations for all termite species
- ✍ preventive only for subterranean termites when used in conjunction with other products
- ✍ primary treatment for drywood termites

Subterranean Termites

Borate Injections

- ✍ for all termite species
- ✍ active drywood infestations
- ✍ wood in contact with the ground, window sills, wet wood or sealed wood
- ✍ all termite species except drywood termites

Drywood Termites Post Construction Treatments

- ✍ for active infestations or preventive applications
- ✍ post construction drywood prevention
- ✍ use in conjunction with fumigation for active infestations

Powder Post Beetles Topical Application

- ✍ for active infestations and preventive applications
- ✍ preventive applications only

Old House Borers Topical Application

- ✍ for active infestations and preventive applications

NOT APPLICABLE

- ✍ inject in wood for active and preventive applications



Carpenter Ants Topical Application and Dust Treatment

- ⌘ preventive and remedial applications only
- ⌘ use as dust in active galleries
- ⌘ foam wall voids for active infestations
- ⌘ inject in wood for active and preventive applications

Decay Fungi Topical Applications and Injection

- ⌘ Brown Rot, White Rot and Water Conducting Rot (including Poria Incrassata)
- ⌘ Brown Rot and White Rot
- ⌘ inject in wood for active and preventive applicatoins



Summary of Borate Products

	Form	Concentration of Active Ingredients	PMRA rating
Pre-Ser-Vor 25-3	Liquid Concentrate	25.3%	Domestic
Borocol 20-2	Liquid	19.8%	Commercial
Borocol 10-2BD	Liquid	9.8%	Commercial
Cobra Rods	Solid	100%	Domestic (pending) Commercial
Impel Rods	Solid	100%	Commercial
Guardian	Paste	37.8%	Commercial
Tim-Bor	Powder	98%	Commercial



Borate testing formula for the determination of penetration of preservative

First Step: Solution #1

Second Step: Solution #2

Apply solution #1 as a fine spray to all surfaces of the timber cross-section and allow to dry for a few minutes. Then apply solution #2 in the same manner and allow to dry for a further few minutes.

A positive red colour indicates the presence of preservative at a concentration of about 0.30% BAE or more. The timber will gradually change colour and the assessment should be made after 10 minutes but before 15 minutes have elapsed after the application of the second solution. If any doubt exists about the interpretation of the test on sapwood it should be analysed by a reliable laboratory.

Bright Red	0.30% BAE or more
Red-Brown	0.25% BAE
Brown-Yellow	0.20% BAE
Yellow	<0.15 BAE

