

## Appendices continued

### General Information about Tim-bor

Tim-bor, Disodium octaborate tetrahydrate,  $\text{Na}_2\text{B}_8\text{O}_{13} \times 4 \text{H}_2\text{O}$ , is more environmentally friendly than other wood preservatives currently used. It is a white, odorless, powdered substance that is not flammable, combustible, or explosive and has acute low and dermal toxicity. The product is itself fire retardant and shows no hazardous decomposition,

Tim-bor is superior to BORIC ACID because it diffuses and penetrates bamboo or wood better and faster. Stirring the solution will cause Tim-bor to completely dissolve into the water, resulting in a clear solution which is very stable. Do not use Fertibor ( $\text{Na}_2\text{B}_4\text{O}_7 \times 5\text{H}_2\text{O}$ )

#### Solubility

Substance	Solubility at 20°C	Solubility at 30°C
Tim-bor ( $\text{Na}_2\text{B}_8\text{O}_{13} \times 4\text{H}_2\text{O}$ )	9.7%	21.9%
Boric Acid ( $\text{H}_3\text{BO}_3$ )	5.5%	6.3%

#### Reuse Guidelines

The Tim-bor solution can be used more than once for treating bamboo. Keep in mind that, as the bamboo sap gets partially drained out of the culm, the starch/sugar from the sap will move into the treatment solution. This leads to inaccurate hydrometer readings. After the 3rd or 4th use add more Tim-bor. At the point when the drained solution foams significantly and/or mold is forming on the surface of the solution and on the bamboo culm it is time for the solution to be disposed of. For more info, visit [www.borax.com](http://www.borax.com)

EBF is currently researching sap content percentages in re-used solutions and will develop more accurate procedures to deal with this issue.

#### How to mix your own Tim-bor in case you don't find a friendly supplier in your country

Our chemist David Kueper, MSc (Organic Technical Chemistry), MBA, from Switzerland has tested this:

Tim-bor can be made by slowly adding 50KG of Boric Acid and 75KG of Borax to 700 liters of water while stirring the solution. When all crystals are dissolved, you will have the equivalent of a 10% Tim-bor solution.



#### Disposal Guidelines

Tim-bor is non toxic to the environment, but is highly saline. When a moderate amount of it is absorbed into the ground, the ground filters out the salt to the point where it does not pollute the ground water. However, it is advisable to dispose of it safely and out of reach of children.

When diluted with more water the discarded solution could be used as a herbicide on terraces and walkways.

#### Where to buy Tim-bor or Borax/Boric Acid in Asia

- Pt Chimifin Jaya Utama, Jakarta  
Tel 021-424-0202, 424-7141, 425-5563  
Fax 420-5588
- UD. Saba Kimia, Denpasar,  
Tel/Fax 0361-410662
- Tim-bor distributor in Thailand  
22/2 Moo2, Soi Jadsarntaharnrua  
Chalermprakiet Rama 9 Rd  
Dokmai, Praves, Bangkok 10250, Thailand  
66 2-726-7300 / 7350, contact: Numchai L.